An Investigation of English Language Needs of Engineering Students at Petra Christian University, Surabaya, Indonesia

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A Thesis Submitted in Partial Fulfillment

of the Requirement for the Degree of

Master of Philosophy

in

Applied English Linguistics

August, 2002

ABSTRACT

This thesis reports on the investigation into the English language needs of engineering students at Petra Christian University in Indonesia. The data was collected by means of questionnaire surveys, semi-structured interviews, classroom observations and text analysis. Perceptions on the English needs of engineering students were gathered from three sources: engineering lecturers, English instructors, and engineering students. Data was analyzed using qualitative as well as quantitative methods.

The findings indicate that students' delayed English language needs have a more significant role than their immediate needs. That is, students need English at the later stage of their study and for their occupational purposes. Although English for academic purposes is also perceived to be important, the limited number of reading assignments in English and lecture handouts which are in Bahasa Indonesia have lowered students' motivation to learn English. The current English course for engineering students does not seem to cater students' academic needs since materials have not been used effectively. Recommendations are made for the curriculum of the English course for engineering students to better meet both academic and occupational needs of the students.

論文摘要

本研究旨在對印尼比丹基督教大學的工程系學生的英語需要作深入及全面的探討。研究方法爲量化和質化兩大範疇，包括問卷調查、老師及學生訪問、課堂觀察、以及教科書本和學生功課之研究。研究觀點角度分別爲：工程系教授/老師、英語導師和工程系學生。

研究結果發現學生的「長期英語需要」比「短暫英語需要」更爲重要。即是，學生在大學課程的最後階段以及畢業後職業上極需要運用英語。雖然，工程系學生也很需要學習「學術用途英語」，但因爲教授的語言和講義、以及學生繳交的功課，都是用印尼語，甚少需要運用英語，因此大大削弱了工程系學生學習英語的動力。總括來說，現存的「工程系英語課程」並未能切合學生的實際需要。本研究最後對課程的改善作出了建議，以求有效地符合學生在課程學習上及未來職業上的需要。

Acknowledgements

I would like to express my deepest gratitude to the following people who have made this thesis possible:

My thesis supervisors, Prof. George Braine and Prof. Jane Jackson for their professional, insightful and continuous guidance from the earliest stage of my research until the completion of my thesis writing.

The rest of the thesis committee, Prof. Gwendolyn Gong and Prof. Jin Lixian, for their constructive comments and feedback; and Prof. Joseph Hung, for his support throughout my M.Phil study.

The teachers and students of the Faculty of Civil Engineering and Design, the Faculty of Industrial Technology and the Department of Foundation Courses, at Petra Christian University, for their cooperation and participation in this research.

Petra Christian University, Oekumenisches Studienwerk e.V. , and the Chinese University of Hong Kong for granting me financial support to conduct my M.Phil study.

My classmates, for sharing with me all the joy and frustrations during the writing of this thesis.

My parents, my sister and her family, for their love and support.

Finally to God, for giving me miraculous strength to go on.

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CHAPTER 1

INTRODUCTION

This chapter begins with rationale of the present study, the importance of English for science and technology (engineering), and a description of the English language teaching and learning in Indonesia. In response to problems of English teaching and learning at Petra Christian University, the need for conducting a needs analysis of engineering students, and its significance is given. Finally, this chapter ends with an outline of the thesis organization.

1.1 Rationale of the Present Study

English plays an increasingly prominent role in scientific publication around the globe (Wood, 2001). There has been a rapid increase in scientific publications in Asian countries due to the pressure to comply with international or Western research criteria. The most prestigious scientific journals are published in English and scientists definitely prefer their writings to be cited in English rather than in their L1. The usage of English as a language of international science is likely to continue.

In education, some countries use English as a medium of instruction for their engineering colleges. In Indonesia, even though English is a privileged foreign language, the medium of instruction for all subjects in tertiary education is the national language, and English is taught only as a subject.

At Petra Christian University (PCU), Surabaya, Indonesia, the location of the present study, 64% of the total text collection at the library is in English (www.petra.ac.id/library/). The focus of the English Curriculum at the university is to enhance the students' ability in reading skills since they have to read English textbooks. In 1998, a needs analysis was carried out by Lie and Limuil based on the request of the university to improve the English syllabus for the non–English majors at Petra Christian University. While a great deal of useful information and sources regarding the English language needs of the students was uncovered, there is a need of a more updated and thorough needs analysis since the needs analysis was done around four years ago.

Unlike the 1998 Needs Analysis which investigated the English language needs of all non-English Departments at PCU, the present research is focused on the English language needs of students from the Faculty of Engineering, at PCU. The rationale behind the choice is to be able to conduct a more focused study to facilitate a much deeper understanding of the target situation. The engineering students at Petra Christian University can be divided into two groups. One group belongs to the Faculty of Engineering and Design and the other group belongs to the Faculty of Industrial Technology. The Civil Engineering Department and the Architecture Engineering Department are under the Faculty of Engineering and Design, whereas the Faculty of Industrial Technology has four departments, namely Electrical Engineering, Mechanical Engineering, Industrial Management and Information Science. Since engineering students account for the largest part of the whole student population at Petra Christian University,

by focusing on the needs analysis of the engineering students, this research can make a more valuable contribution to the development of English language teaching and learning in the university.

1.2 The Importance of Needs Analysis

The teaching of English to engineering students belongs to the area of English for Specific Purposes (ESP). Since ESP is a movement based on the notion that language teaching should be tailored to the specific learning and language use needs of identified groups of students, a needs analysis should be carried out to achieve a full picture of the English needs of the engineering students.

1.3 Objectives of the Study

The present research aims to:

1. investigate the current English language needs of engineering students at Petra Christian University,
2. determine the effectiveness of the English language course for engineering students that is administered by the Department of Foundation Courses,
3. identify the gap between what the engineering students need to learn and what they have been taught, and
4. make recommendations for the improvement of the curriculum of the English support course for engineering students at PCU.

1.4 Significance of the Study

The present study is intended to contribute to a better understanding of the English language needs of engineering students at Petra Christian University. It also aims to give recommendations to the curriculum of the English support course for engineering students so that it can better meet the students' needs.

1.5 Organization of the Thesis

This thesis is organized into six chapters. The next chapter, Chapter Two, reviews the literature and previous studies on English language needs analysis in the Asian context and in Indonesia. Chapter Three elaborates the research design selected and procedures carried out to collect and analyze the data. The research findings are presented in Chapter Four. Chapter Five discusses the engineering students' current English language needs, the information on the English course offered for them, and the discrepancies of the students' demands and what they are taught. Finally, Chapter Six summarizes the findings of the study, and gives recommendations for the English curriculum at Petra Christian University.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews the theoretical background and previous studies on needs analysis and examines those studies in relation with the present research. It begins with a summary of needs analysis in English language teaching, and then reviews previous needs analysis in the Asian context. Finally the assessment of needs done in Indonesia is highlighted and critiqued.

2.1 Needs Analysis in English Language Teaching

Needs analysis is an on-going and systematic process of collecting information on learners' needs (Richards, 2001; Graves, 2000); it also refers to the gathering of information to find out how much students already know and what they still need to learn (Brown, 1995). Information gained from needs analysis will serve as the basis for constructing a language curriculum that represents the students' needs. The learners' information can be used as the starting point for devising syllabuses, and can be translated into language program goals that can serve as the basis for materials selection, teaching methodologies and evaluation (Brown, 1995; Santopietro & van Duzer, 1997; Jordan, 1997). In particular, an investigation of learners' needs aims to learn what and how particular language skills can be maximized for a specific learner group, and what language problem learners are experiencing. It also attempts to help determine the target situations and learning environment that can fit such learners (Nunan, 1990; Richards,

2001). Since English for Specific Purposes (ESP) is a movement based on the notion that language teaching should be tailored to the specific learning and language use of identified groups of students, needs analysis should be conducted to achieve a complete description of the students' language needs (Dudley–Evans & St. John, 1998; Johns & Price-Machado, 2001).

2.1.1 Subjective Information versus Objective Information

Information on the learners can be categorized into two kinds, subjective information and objective information. The first one is information about the present, which includes who the learners are, their language proficiency, intercultural competence, interests, learning preferences and attitudes. The second kind is information about what the learners need to learn which include the learners' goals and expectations, the target context, situations, roles, topics, and content, types of communicative skills they need and tasks they will perform. Subjective needs are more difficult to determine since they have to do with wants, desires and expectation of the learners, while objective needs are those needs determined on the basis of clear cut, observable data gathered about the situation. Objective needs includes the language that students must eventually acquire, their present proficiency and skill levels and so forth while subjective needs are attitudes and expectation the learners have with respect to what and how they will learn (Graves, 2000; Brown, 1995). Objective information is a *product oriented* since it sees learners' needs as the language they will have to use in particular communication situation; while

subjective information is *a process oriented* because taking into account a multiplicity of affective and cognitive variables such as learners, attitudes, motivation, awareness, personality, wants, expectations and learning styles (Brindley, 1989).

2.1.2 Major Approaches in Needs Analysis

The following major focuses in needs analysis have developed since 1970s: *target situation analysis; deficiency analysis; strategy analysis; mean analysis; and the language audit* (West, 1997; West, 1994; Dudley–Evans & St. John, 1998). *Target situation analysis* is an analysis of demands/necessities of the target situation (objective needs), that is, what the learner has to know in order to function effectively in the target situation. Besides objective needs, learners' subjective needs/wants is also a part of students' information that needs to be investigated. Identifying the gap between the objective needs/necessities and what the learner already knows is called *deficiency analysis*. *Strategy analysis* is investigating learners' learning strategies: from where they are to where they want to go. Constraints of the learning situation, external factors, including the resources available, the prevailing attitudes or culture, the materials, aids and methods available is commonly identified by a *mean analysis*. *The language audit* is a large–scale survey undertaken to determine what languages ought to be learnt, for what reasons, and by how many people.

2.1.3 Orientations on Needs Analysis: Trends Over Time

The term "analysis of needs" was first introduced by Michael West in the 1920s, who defined it as how and what learners will be required to do with the foreign language in the target situation. In fact, needs analysis gained popularity as a result of the English for Special Purposes (ESP) movement, and began to be the key instrument in course design. Language teachers have frequently based their teaching on some kind of intuitive or informal analysis of students' needs. However, the concept of a formal analysis of the requirements was established during the early 1970s, largely as a result of the work of those associated with the Council of Europe, in the field of ESP (West, 1994).

There has been a focus shift on language teaching needs analysis from English for Occupational Purposes (EOP) to academic language (English for Academic Purposes/ EAP). More recently, even a general language learning needs analysis has been conducted. The scope of needs analysis was broadened from target situation needs to constraints, teaching methods, learning strategies and materials selections (West, 1994). Table 2.1 below shows the stages in needs analysis from early 70s to early 90s.

Table 2.1 Stages in Needs Analysis (West, 1997)

Stage	Period	*Focus*		Scope of analysis	Examples
1	Early 1970s	ESP	EOP	Target situation analysis	Richterich, 1971/1980 ELTDU, 1970 Stuart & Lee, 1972/85
2	Later 1970s		EAP	Target situation analysis	Jordan & Mackay, 1973 Mackay, 1978
3	1980s	ESP and general language teaching		Target situation analysis Deficiency analysis Strategy analysis Means analysis Language audits	Tarone & Yule, 1989 Allwright & Allwright, 1977 Allwright, 1982 Holliday & Cooke, 1982 Pilbeam, 1979
4	Early 1990s	ESP		Integrated/ computer-based analyses Materials selections	Jones, 1991 Nelson, 1993

2.1.4 Limitations of Needs Analysis

Although needs analysis plays a crucial role in course design, it has several shortcomings (West, 1994). The lack of awareness of the existence of needs analysis as a tool in course design tends to occur due to problems of familiarity and expertise. When converting learners' needs into course objectives, specifying precise needs sometimes can result in either restricted competence or multiple course objectives. To avoid the above limitations, the validity or reliability of the instruments used and the results obtained are required for an effective needs analysis procedure.

2.2. Needs Analyses in the Asian Context

Numerous needs analyses have been conducted in Asian context (see Savage & Graeme,1992; Bhatia & Candlin, 2001; Noakes & Wong, 1997; Chia, Johnson, Chia & Olive, 1999; Ward, 2001; Hyland, 1997; May 2001). Needs analyses done in the EFL context have usually followed triangulated and complete instrumentation and design to gather learners' information. A needs analysis carried out in Thailand, for example, highlighted how the learners (the project staff in the Udornthani main office and two suboffices in other northeastern provinces) got involved in the needs analysis and how they participated actively in the program design. This analysis was conducted in order to develop a language program for the staff of the Aquaculture Outreach Project of the Asian Institute of Technology in Udornthani, Northeast Thailand. The paper described the experience of the teachers in working together with the learners. The role of the teacher was observing and assisting whereas the learners were working on tasks, reporting back, expanding and evaluating. The study showed clearly how the teacher collaborated with the learners in three different phases within the language program framework. They were involved in discussions to identify the learning needs (in the first phase: the one-day site visit) and through completing tasks and orientation, the needs were realized (during the 2-week intensive workshop) (Savage & Graeme, 1992).

A large-scale project investigating the requirements of English use by undergraduate Bachelor of Business Administration (BBA) students, was conducted at five universities in Hong Kong (Bhatia & Candlin, 2001). A variety of well established methodological

instruments and procedures from six perspectives were applied. Views on English needs were gathered from students, teachers, curriculum, writing performance, textual and occupational perspectives by means of questionnaires, focus group interviews (both students and staff), classroom observations, and textual analysis. The study investigated tasks and communication requirements that students needed to perform in both their business classes as well as in the English course for business students. A comparison was made to find out whether there was any mismatch between communication requirement in business classes with the instructions in the English course. To achieve a better understanding of the business students' English demands, textual analysis was also carried out. Samples of students' writing assigned by the business teachers were collected and analyzed.

Data for an English needs analysis of engineering students in Hong Kong University of Science and Technology (Noakes & Wong, 1997) was gathered by triangulation. Interviews, questionnaires, students'written work, reports from the Hong Kong Institute of Engineers and a 1995 needs analysis of LANG 103 (the English course offered for engineering majors) were the instruments to gather information about engineering students' English needs. Data was obtained from various stakeholders such as School of Engineering Faculty, students and student alumni, Language Center English Language instructors, Students Affair Office and companies employing engineering graduates. Recommendations for the development of a new English Language curriculum for both groups of students were made as the follow-up of the needs analysis. Samples of second

and third year engineering students' written work were also gathered. The information includes types of written work, length, skills needed, typical language functions, typical grammatical and lexical problems; and strategic problems. By analyzing the data, the study could figure out English demands from various engineering sub-disciplines.

An analysis and classification of writing assignments from upper–division courses in the natural sciences and engineering was done to get information of students' academic demands from genre analysis view point (Braine, 1995). Samples were taken from 80 assignments collected from 17 courses at the University of Texas at Austin. They were classified into five writing genres: Summary/Reaction, Experimental Report (Lab), Experimental report (Design), Case Study, and Research Paper. Although the research was done in an English as a first language setting, recommendations and implications made in this study were addressed to composition classes for ESL/EFL students majoring in the natural sciences and engineering. The study suggested that individualizing assignments and emphasizing paraphrase and summary activities were important.

An investigation of English needs in the medical context for college students in Taiwan was carried out by Chia, Johnson, Chia and Olive (1999). Although a questionnaire survey was the only instrument used, data was gathered from various viewpoints, namely the lower class students, the upper class students, and the faculty. The aims of this study were to describe the importance of English language use in students' studies and their future careers; to basic English skills needed in a freshman English course and suggestions for the development of an English language curriculum.

Not only did needs assessments in the Asian context utilize multiple sources of data and instrumentation, but also put more specialized information on the different discipline characteristics, for example, from a textual perspective. A study conducted in Thailand aimed at investigating chemical engineering students' attitudes to text and other parts of English language textbooks (Ward, 2001). Students in Thailand had to attend L1 lectures but perform reading tasks in English. The research presented evidence that science and technology students in foreign language settings compensated for their difficulty in reading English language textbooks by concentrating their attention on applications, and especially the examples, given in those textbooks.

An investigation of students perceptions of English in tertiary study, conducted by Hyland (1997), involved questionnaire responses of 1,600 undergraduates at five Hong Kong universities, examining the importance students attributed to English, their major difficulties with the language, and the value they placed on EAP classes. The results showed that students recognize the value of English in academic success, with considerable variability across the disciplines, proficiency levels, and years of study, both in the extent to which they value EAP and the confidence students had in their ability to meet the English demands of their studies. The findings had implications for language teachers in syllabus planning and may be useful in sensitizing students and faculty lecturers to the significance of language in an undergraduate study. Unlike the previous needs analysis conducted in EFL context, this study lacks multiple instrumentation and procedures in gathering students' English needs.

The main aim of the study done by May (2001) was to investigate the vocabulary knowledge of tertiary students and to find out whether they needed help with vocabulary for their academic studies. The participants of this study were more than one thousand students newly admitted to the seven tertiary institutions in Hong Kong. The main instrument for data collection was *Paul Nation's Word Levels Test*, copies of which were mailed to the participants. Findings of the study indicated a positive and significant correlation between language proficiency and vocabulary course. It showed that vocabulary knowledge had a very essential role to play in the acquisition of L2 proficiency.

Research methods and implications applied in those Asian countries might not necessarily be applicable in Indonesia. Even though English is taught as a foreign language in these countries, English teaching and learning in each area has a different setting. For example, English is used as a medium of instructions in tertiary education in some Asian countries. The different setting can lead to different academic demands. Productive skill demands (writing and speaking) for Indonesian students might not be as crucial as for Hong Kong students, for example. Students in some East Asian countries might need to listen to lectures and to do academic tasks in English, which is not the case for Indonesian students.

2.3. Needs Analyses in Indonesia

Questionnaire surveys, interviews, and classroom observations are the common methods / instruments used in a needs analysis. As suggested by Richard (2001) and Gall, Borg, & Gall (1996), a combination of more than one method is advisable. However, the investigation of needs carried out in Indonesia are mostly by means of questionnaire surveys (Ahmad , 1997; Setijono & Tabiati, 1997; Ras, 1997). In-depth and thorough data cannot be collected solely by survey because questionnaires have several shortcomings. A very low rate of return is one of the disadvantages. Another disadvantage is the designer can encounter difficulty in achieving a balance between asking too many and too few questions. (West, 1994). Questionnaires cannot probe deeply into the respondents' opinions and feelings. Also, once the questionnaire has been distributed, it is not possible to modify the items, even though they may be unclear to some respondents (Gall, et. al., 1996)

Some needs analyses done in Indonesia were impressionistic; they were descriptions, not based on research. In some other publications, most of the data gathered was from the results of students' surveys. Views from other stakeholders, such as teachers and program administrators were not taken into account. To get a fuller understanding of the nature of the teaching and learning process happened in the classroom, no classroom observation has been conducted in all studies.

Since the English teaching and learning for non-English majors in Indonesia is handled by "compulsory undergraduate English", most of the needs analyses put a great

deal of emphasis on the description of the management of the English course, or problems faced by the course. Discipline specific information which can describe students' subject area demands, such as genre analysis, analysis of writing tasks or analysis of textbooks used in subject courses, had not been extensively discussed.

Research resources are not rich in Indonesia. As a result, publications concerning engineering needs analysis in Indonesia are very limited. To the best of the researcher's knowledge, there has not been a single analysis assessing Indonesian engineering students' English needs.

A survey of non-English departments undergraduate from ten state universities and teacher training colleges in Sumatra, Indonesia, was conducted by Sriwijaya University Language Institute (Ahmad, 1997). The findings revealed that the majority of respondents viewed the need for EFL from a very limited perspective; for example, to help students to access information necessary for the successful completion of their undergraduate degree training. Other findings also revealed that reading should not be the only goal of English language learning, as a substantial percentage of the undergraduate surveyed believed that other skills were useful to communicate actively in English. Although the majority of respondents preferred English courses to be made compulsory, the study suggested that making the English courses be optional, as it would reduce the class size. Concerning the management of English course, the study suggested that undergraduate ELT be centrally organized by a unit, whose status, functions and responsibilities were clearly defined.

A study by Yusuf & Sewoyo (1997) described the English language situation in Trisakti University before the establishment of the Language Center in 1994. The findings indicated that the management of English language teaching in the university should not be administered by the Department of Foundation Courses since the purpose of teaching English was not to develop the students' personality or to change their attitudes (which were the aims of the Department of Foundation Courses). It was concluded that one of the objectives of teaching English must be to equip the students with the four language skills in particular so that they could comprehend textbooks and references written in English.

A paper by Safnil (1997) attempted to discuss the problems faced by English Language Teaching in Bengkulu University and to propose solutions to overcome them. A number of problems discussed in the paper were large classes, too little time allocated for English, the mixed ability of the students, heterogeneous levels of motivation and expectation among the students, the absence of a requirement by their subject lecturers to read materials in English, and so on. An alternative way proposed to tackle the problems was to establish a language center for the highly motivated students so that they could work at their own pace and according to their own interests. Collaboration between the English learning center and non-English departments were crucial. English teachers should have training in ESP to make them aware of the problems students encounter in their subject area. Regarding which English skills to teach, there was a different perspective between the university and the students. The university perceived reading as

important while students preferred speaking skill. To solve the problem, integrating two teaching objectives was suggested. Developing the students' interest and meeting the institutional requirements at the same time could be used as a possible solution. The English classes should be offered only when students felt the importance of the language, such as when they had to read textbooks or when they needed to write their final report.

A case study was conducted by Setijono and Tabiati (1997) to provide a description on the evaluation of the English course for economics majors at Brawijaya University. The study described the process of setting up the English course, and the adjustment made concerning the time allocation of the English course, from first and second semesters, to third and fourth semesters. The change of objective setting from reading skill to integrated reading and writing was also discussed.

A study by Ras (1997) discussed the change of policy regarding the management of a compulsory English course for non-English department students at Riau University. More time was allocated for the English course as a result of the needs analysis. Discussions on students' receptive and productive skills needs, teaching methodology and teaching aids, continuous assessment and current problems being faced by the English course were included.

An investigation of vocabulary knowledge of Indonesian university students (Nurweni & Read, 1999) revealed that Indonesian students' vocabulary acquisition fell far short of the threshold level for independent reading of unsimplified texts. The study was conducted because the ability to read textbooks in English is a crucial requirement for

university students. In order to address the students' lack of vocabulary skill, the study recommended that English teachers should pay more attention on vocabulary teaching. One way was to implement a direct teaching of high–frequency words. An effort to define each faculty vocabulary needs by drawing on more specialized studies.

The issue of how much subject content knowledge was required for EAP teachers to prepare their learners successfully for academic study at the university level was explored by a study of the English Language Teaching component of the Inter-University Centers project at Bogor Agricultural University and Bandung Institute of Technology (Bell, 1993). It has generally been thought that the English teachers did not need to master specialized academic knowledge of the learners' subject areas. This was because the teachers' responsibility was to cater to the learners' language skill. The learners could deal with complexities of terminology and ambiguities of subject content that might be beyond the English teachers' knowledge of the specialists' subject. Bell's study showed that it was necessary for the English teachers to advise the students on key words and concepts to guide the students in identifying important part of speech and content words that carried the central message in scientific discourse. Separating key concepts from redundant language in scientific discourse required knowledge of which term were key and which ones were not. And this came from an in-depth study of the subject matter. Without this background knowledge the English teachers would not be able to interact effectively with the learners.

Although needs analyses for non- English department students have been conducted in Indonesia, most of them were mainly impressionistic. Information on students' needs was gathered mainly by means of surveys. Triangulation in methods and other instruments were not utilized. Further, there has been a limited number of needs assessment focusing on engineering, therefore English language needs analysis for Indonesian engineering students are needed. Table 2.2 below summarizes English language needs analysis conducted in Indonesia.

Table 2.2 Needs Analysis on English Language Teaching in Indonesia

Researcher	Methodology/Descriptions	Findings
Ahmad (1997)	Surveys non-English department majors on 10 state universities in Sumatra	• Relationship between reading and writing • Students' perceptions on their needs • Should ELT be compulsory? • ELT central management by a special language unit with full time staffing provisions
Yusuf and Sewoyo (1997)	Stufflebeam CIPP (Context, Input, Process, Product) Trisakti Univ. English language teaching situation	• Context: English Management by MKDU is not appropriate • Input: human resources, curriculum, facilities • Process: analysis of students' perceptions, opinions, attitudes • Product: students' English competence
Safnil (1997)	English language teaching problems and possible solutions at Bengkulu University	• Problems: large classes, mixed ability heterogeneous level of motivations
Setijono and Tabiati (1997)	Descriptions of management, and problems faced by English course in Brawijaya University	• Reading to writing
(Ras) 1997	Descriptions on the needs of more time allocated for an English course	• A new English course that better meet the students' needs (integrated skills)
Nurweni and Read (1999)	Vocabulary knowledge of Indonesian university students	• Indonesian students have a low vocabulary knowledge
Bell (1993)	Do EAP teachers require knowledge of their students' specialist academic subjects?	• Collaboration between subject teachers / specialist and English teachers is required

2.4. A Needs Analysis at Petra Christian University (1998)

There has been a demand for revising the present English Curriculum for non-English Department majors at PCU so that the new English curriculum could show more reflections to the students' English needs, both for academic as well as vocational purposes. In investigating English needs of non-English majors at Petra Christian University (Lie and Limuil, 1998), questionnaire surveys (non-English majors and faculty), a focus group discussion with English instructors and semi-structured interviews with subject lecturers were conducted. Views of prospective employers were also gathered in this study, by means of questionnaire surveys. In short, this research provided valuable information on students' workplace needs. Being only four-year-old, it is still relevant to give a picture of current English needs in Indonesian companies.

The objectives of the research was to investigate the initial English proficiency of the students who attended the English course at the Department of Foundation Courses; the readiness of the English language instructors at the Department of Foundation Courses; the academic and vocational English needs of the non-English departments students.

To investigate the students' English proficiency, the result of English public examination was used. The exams, which were administered by the government, were targeted at students who were at their final year of secondary school. They were one of the requirements for those students to graduate from secondary school and to enter the university. Questionnaires were randomly distributed to 10 students from each department to know the difficulties encountered by the students. A focus group

discussion with 5 English language instructors was carried out to find out their readiness in teaching English to the students. Three content lecturers (chosen based on their expertise) were interviewed, and questionnaires were distributed to 50 (randomly selected) content lecturers. Questionnaires were also distributed to randomly selected employees/companies. Public exam results and questionnaires were analyzed quantitatively, whereas interviews and focus group discussion were analyzed qualitatively.

Based on the survey data, it was found that those students' grades for DANEM (public exam) ranged between 5.94 up to 8.12 on 10.0 point scale. Students believed that English was very important although they lacked confidence on their English ability. Students indicated that the English language instructors had an important role for them and should pay more attentions to their academic performance. Instructors' use of English as a medium of instruction in the English course needed to be optimized. Instructors' methods of teaching were considered to be quite communicative. According to the students, the best instructors were those who are active and creative (28%) and easily interact with the students (24.8%). The number of students who had ever taken any English course outside school equaled the number of students who had not taken any.

There had been a discrepancy between the future English demands and the initial English proficiency of the students. English was needed for occupational purposes from various area like production, finance, customer service, marketing, and so on. Secretarial

and marketing had the highest demand rank. English was used at meetings, during informal communication with staff, in proposal/report writing, and correspondence.

Findings showed that the English course material (previously used) did not reflect the occupational English demands. Respondents indicated that it was monotonous and boring. The role of instructors was believed to be able to bridge the gap between the students' English proficiency and the occupational demands. However, instructors revealed barriers, such as large classes (60-65 students in one class), and heterogeneous levels of students' ability. Instructors needed to enhance their methodology skills.

2.5. Research Gap

So far, this literature review has discussed needs analyses conducted in Asia, in Indonesia, and at Petra Christian University. As for the needs analyses in the Asian context, it has been pointed out that research findings in a context such as Hong Kong, for instance, may not be applicable in the Indonesian context. Although English could be considered a foreign language in both contexts, English plays a much more prominent role at the tertiary level in Hong Kong than in Indonesia. It is the medium of instruction, the medium of research, and the medium of publications in most tertiary contexts in Hong Kong. Writing and speaking, the skills that most Hong Kong students need, are not the skills needed by Indonesian students, who at the most only have to read textbooks in English.

As far as the needs analyses in Indonesia, the above analyses showed that most of them are of an impressionistic nature, data being gathered mostly through questionnaires directed at students. As pointed out earlier, questionnaires have a number of shortcomings. Their rate of return could be low, they cannot probe deeply into the respondents' opinions and feelings, and once distributed, the items in a questionnaire cannot be modified, even if they are confusing to respondents. Other instruments and sources of data collection, such as surveys of teachers, interviews with students and teachers, and textual analyses have not been employed. In short, data collection has not been triangulated.

As far as Petra Christian University is concerned, the 1998 needs analysis conducted there investigated all non-English department students. It did not focus on engineering students, who may have specific needs of the English language that are not common to all the students at the university. Therefore, an investigation of the English language needs of engineering students at Petra Christian University is fully justified.

CHAPTER 3

RESEARCH DESIGN AND PROCEDURES

This chapter describes various data gathering methods used in needs analysis. Characteristics, strengths and weaknesses of each method will also be mentioned. Detailed procedures in collecting the data on the students' English needs in the present research are also presented.

3.1 Data Collection Methods in Needs Analysis

Needs assessment provides a basis for setting objectives for curriculum or program development. Because needs assessment is closely related to objective-based models of evaluation, it can be treated as both a quantitative and qualitative approach in educational research (Gall, et al., 1996).

A variety of procedures can be used in conducting needs analysis and the kind of information obtained is often dependent on the type of procedure selected (Richards, 2001; Brown, 1995). The categories of the main instrumentation in gathering data for needs analysis are questionnaire surveys, analysis of authentic spoken and written texts, discussions, structured interviews, observations and assessments (Dudley-Evans and St. John, 1998). The main sources of needs analysis are the learners, people working or studying in the field, ex-students, documents relevant to the field, clients, employers, colleagues, and previous ESP research in the field.

The questionnaire is the most common method of needs analysis; moreover, compared to other procedures, questionnaires are more efficient for gathering information on a large scale (Brown, 1992; West, 1994). Questionnaires can be used to investigate students' language and skills use and difficulties. If this is done on a sufficiently large scale, an overall picture will emerge of students' perceived needs. In addition, it will be possible to build up a profile of a typical student attending the EAP course, including the background, language, learning styles together with typical uses of English and the difficulties experienced (Jordan, 1997).

The interview is more commonly used in qualitative research, because it permits open-ended exploration of topics and elicits responses that are couched in the unique words of the respondents. Skilled interviewers can follow up a respondent's answers to obtain more information and clarify vague statements. They also can build trust and rapport with respondents, thus making it possible to obtain information that the individual probably would not reveal by any other data collection method (Gall et al., 1996). Further, since questionnaires cannot probe deeply into the respondents' opinions and feelings, interviews can provide completeness and depth of coverage and the opportunity to clarify and extend because of the physical presence of the analyst (West, 1994; Gall et al., 1996)

A major difference between questionnaires and interviews lies in the degree of structure in the interview, which, in itself, reflects the purposes of the interview; for example, to generate intensity of respondents' feelings about a given issue or to indicate unique, alternative feelings about a particular matter. The most common way of deciding which type of interview to use is by determining the amount of structure

desired. At the end of the continuum fall highly structured, questionnaire–driven interviews; at the other end are the unstructured, open- ended, conversational formats (Merriam, 1998).

Observation is another instrument applied in order to conduct a needs analysis. Observation in English for Academic Purposes needs analysis can be in the form of sitting in on subject lectures or practical sessions. In the ESL/EFL context where English is used as the medium of instruction, observations are conducted in order to find out how and when English and the L1 are used interchangeably. Most observation or "shadowing" is for Target Situation Analysis purposes but it could be for the Present Situation Analysis of a particular individual. In classes where English is not the medium of instruction, observation and shadowing are implemented for understanding work patterns, although they cannot provide language data for materials production. The relationship between the observer and the observed consists of four stances: complete participant, participant as observer, observer as participant and complete observer (Dudley-Evans and St. John, 1998; Merriam, 1998).

A researcher will choose observation as an instrument to gather data for several reasons. As an outsider, an observer will focus on phenomena that are routine to the participants themselves. This can help the observer to understand the context. According to Merriam (1998), observations are also conducted to triangulate emerging findings: that is, they are used in conjunction with interviewing and document analysis to substantiate the findings. Another reason to conduct observations is to equip the researcher with some knowledge of the context, specific incidents, behaviors, and so on that can be used as reference points to be asked in the

interviews. This is a particularly helpful strategy for understanding ill-defined phenomena.

Analyzing authentic text is a crucial stage of needs analysis (Dudley-Evans and St. John, 1998; Brown, 1992; West, 1991). If the learners will use the target language primarily for reading and writing, text analysis may help in determining what the students will ultimately have to read or write. The units of analysis chosen will tend to reflect the needs analysts' understandings of the nature of different kinds of texts and analysts' belief systems with regard to the nature of language and language learning. They are invaluable for learning about the real and carrier content. They can also form the basis of classroom materials, with three provisos: the client/source has given permission; fictitious facts replace confidential ones; and anything, which can directly identify the author, is removed. For evaluation, the texts learners produce in class can be looked at to evaluate progress towards the objectives and to identify needs that have not yet been met.

3.2. The importance of Instrument Selection in Needs Analysis

West (1994) pointed out that the most crucial step in needs analysis is selecting the information-gathering instrument. A single needs analysis may employ more than one method; however, the choice of the most appropriate research instrument depends on the scope and objectives of the inquiry and the nature of investigation. The method used in each case must be unique if it is to accommodate all the variables of persons, institutions, time and place.

Since any one source of information is likely to be incomplete or partial, a triangular approach (i.e., collecting information from two or more sources) is advisable. Many different sources of information should be sought (Richards, 2001).

Brown (1992) pointed out that there are four categories of people who may be involved in a needs analysis: the target group, the audience, the needs analysts and the resource group. The target group consists of people about whom information will ultimately be gathered, such as the students in a program, the teachers or administrators. The audience is all those who will eventually be required to act upon the analysis. This group usually consists of teachers, teacher aides, program administrators, and any governing bodies or supervisors in the bureaucracy above the language program. The needs analysts are the persons responsible for conducting the needs analysis. In addition to conducting the needs analysis, this group will probably be responsible for identifying the other three groups. Finally, the resource group consists of those who may serve as sources of information about the target group.

Dudley-Evans and St. John (1998) stated that outsiders can be perceived as more objective since they provide a fresh or alternative viewpoint and are not stakeholders. However, as outsiders, they do not know the situation and the environment so they may miss or misinterpret data. On the other hand, insiders will have a feel for the situation but can be too close and involved, or lack expertise. A known, respected outsider working together with insiders is one alternative.

3.3 The Case Study Approach

In a broad sense, the proposed research is a case study as the data were collected from a single university. The case study researcher typically observes the characteristics of an individual unit to probe and analyze deeply the various phenomena which occur in that community. A case study is an in-depth study of instances of a phenomenon in its natural contexts and from the perspective of the participants involved in the phenomenon. It aims to build generalizations about the larger population to which the unit being investigated belongs; it provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories or principles (Nunan, 1992; Cohen, Manion & Morrison, 2000; Merriam, 1998).

Unlike experimental, survey, or historical research, case study does not claim any particular methods for data collection or data analysis. A case study generally utilizes a range of method for collecting and analyzing data, rather than being restricted to a single procedure. Use of multiple methods to collect data about a phenomenon can enhance the validity of case study findings through a process called triangulation. It is possible to combine qualitative and quantitative methods of data collection (Merriam, 1998; Nunan, 1999).

3.4 Characteristics of Procedures in Needs Analysis

The three characteristics of sound information gathering procedure are *reliability, validity* and *usability* (Brown, 1992). Reliability will be defined here as the consistency with which a procedure obtains information. Any procedure should obtain

approximately the same results every time it is used to measure the same person or object. The validity of the procedure will be defined here as the degree to which it is measuring what it claims to measure. If a questionnaire purports to be a measure of the level of student motivation, it is important that it be just that, not a reflection of something entirely different. The concept of usability has to do with the degree to which a procedure is practical to use.

3.5 Strengths and Weaknesses of Different Procedures

Each of the procedures has different strengths and weaknesses. Thus, if analysts use various combinations of procedures, they will create a stronger overall information gathering process. In other words, multiple sources of information should be used in a needs analysis, although the specific combination appropriate for a given situation must be decided on the site by the needs analysts themselves. Many methods of carrying out a needs analysis have been developed. What is important is that, wherever possible, several methods should be used in order to obtain a complete and accurate picture (Brown, 1992; West, 1991)

3.6 The Present Study: Research Design and Procedures

To provide a clearer, richer picture of the English language needs of the engineering students at Petra Christian University, a wider range of procedures was applied. Triangulation in methods of data gathering as well as sources of data, which was an important feature of this study, were implemented. Questionnaire surveys, semi-structured interviews, classroom observations and text analysis were carried out

in this study to reveal information about the English language needs of the engineering students from the perspectives of the engineering students themselves, the engineering lecturers, and the English instructors.

By conducting the English language needs analysis of Petra Christian University students, the researcher sought to:

- investigate the current English language needs of engineering students at Petra Christian University,
- determine the effectiveness of the English language course for engineering students that is administered by the Department of Foundation Courses,
- identify the gap between what the engineering students need to learn and what they are learning, and
- make recommendations for the improvement of the curriculum of the English support course for engineering departments at PCU.

Table 3.1 shows the overall research design for the present study.

Table 3.1 Research Design

	Faculty of Civil Engineering and Design & Faculty of Industrial Technology	Dept. of Foundation Courses
Surveys • engineering students • engineering lecturers • English instructors (Total=470 students)	13 engineering classes	3 English language classes for engineering students
Classroom Observations	13 engineering classes	1 class
Semi - Structured Interviews • In Bahasa Indonesia, translated and transcribed into English • 15-20 minutes for each interview	6 lecturers, 5 first year students	3 lecturers, 1 coordinator
Text Analyses	Texts collected: • Syllabuses (all engineering dept. surveyed) • course outlines (some) • hand-outs (all courses surveyed) • textbooks	Core texts used in the course: • *Reading English for Non-English Dept.* • *Successful Reading* • *Building Bridges: EAP (Beyond the Classroom)*

3.6.1 Designing the questionnaires and interviews

Questionnaires design was based on the review of sample questionnaires for surveys done on similar topics. A number of consultations with thesis supervisors were then carried out. Revisions on the format, organization and content of the questionnaire drafts were made based on the consultations.

Three sets of questionnaires were designed; one set was for the engineering students, the second set was for the selected engineering lecturers, and the third set

was for the English instructors (who teach English course for engineering students). Each set consisted of three parts: demographics; their perceptions of English needs in engineering classes and their views about the English language course. Samples of the three sets of questionnaires can be seen in *Appendix A.1-3*.

The demographics section included questions about age, gender, the specific engineering department each subject belonged to (civil, architecture, electrical, mechanical, and so on). Information such as English grade for DANEM (the public exam), and year of study were listed in the engineering students' questionnaires. Engineering lecturers and English instructors questionnaires elicited length of teaching experience at Petra Christian University and their educational background The purpose of the demographics section was to get a complete profile of the subjects.

The second part of the questionnaires was aimed at gathering the engineering students', the engineering lecturers' and the English instructors' perceptions on the English needs of the students in their engineering classes. In this section the subjects were asked whether they perceived English to be important. They had to rate their perceptions on a 4-point scale: *very important, important, somewhat important* or *unimportant*. The focus of this section was to find out which particular English skills (grammar, speaking, reading, listening, or writing) that the subjects perceived to be important for improvement, and which skills they considered to be their strengths and weaknesses. Subjects were also asked to select lists of tasks that they had to perform in English in their engineering classes. English textbooks were used in the students' engineering studies; therefore, questions about reading skill were included, such as information on percentage of reading assignments that students needed to do in

English, and the subjects' perception on the difficulties of selected English texts (core textbooks, journals, lecturer's handouts, etc.). The last part of the questionnaire, on the subjects' views of the current English course (administered by the Department of Foundation Courses for non-English department majors at PCU), had several aims such as to ask the subjects whether materials being used in the English course were useful/relevant to the engineering classes. The data on subjects perceptions whether General English or ESP was preferred, and how English had to be taught (as an elective course or required one) were collected on this part.

Questionnaires were first prepared in English, and then translated into Bahasa Indonesia before distribution. Subjects were asked to fill in the questionnaires in their first language in order to avoid misinterpretation due to language barrier if it was done in English.

Interviews questions were basically derived from the questionnaires, such as how important English was within the perspectives of the subjects, why specific skills were perceived to be the most important and other skills were less important, whether General English or ESP was preferred by the subjects and what their reasons were. Problems being faced by the English course were also probed, especially during the interview sessions with the English instructors. The aim was to get a more elaborated answer in the form of qualitative data from the subjects. Samples of interview questions are listed in *Appendix B.1-3*

3.6.2 Data Collection Procedures

The information gathering on the English language needs of engineering students took place at Petra Christian University Surabaya, Indonesia, from May 29 up to July 29, 2001.

Letters (approved by the English Department at Petra Christian University) were sent to the Faculty of Civil Engineering and Design, the Faculty of Industrial Technology, and the Department of Foundation Courses to seek formal permission for the researcher to conduct surveys, interviews, classroom observations, and syllabus/materials collections. The Civil Engineering Department, the Mechanical Engineering Department, and the Information Science Department recommended classes/lecturers that might have been available and appropriate for surveys, classroom observations, interviews and materials collections. For other engineering departments, the following were adopted: the researcher copied the lists of names of students, names of lecturers, and schedules of classes taught by each department that semester. From that list, the researcher selected the lecturers to be interviewed and classes to be observed. One of the criteria for the selection was the seniority of the lecturers. The number of senior lecturers and junior lecturers who were interviewed was equal. Another criterion for subject selection was the year of study of the engineering students. The researcher tried to get representatives of students from different years of study to be surveyed, observed and interviewed in each engineering department.

The exception was in the Department of Foundation Courses, where there was only a single instructor teaching English to the Engineering students (3 classes) that semester.

Three sets of questionnaires were distributed to three different groups of subjects, namely the engineering students, the engineering lecturers, and the English instructors who taught students from the Engineering Departments. Before distribution, different set of questionnaires were pilot tested to different group of subjects (to 5 engineering students and to 5 lecturers) to make sure that the lists of questions were comprehensible. Minor adjustments were made based on their feedback. All questionnaires that were distributed were in Bahasa Indonesia. The total number of classes surveyed was 13. The researcher observed each class, and distributed the engineering student questionnaires at the end of the session and waited for the students to fill them in. It took approximately 15 minutes for the students to fill in the questionnaires.

For engineering lecturer questionnaires and English instructor questionnaires, the researcher applied a slightly different procedure. She approached the teachers in person after all classroom observations were completed. She then distributed the questionnaires and waited for them to complete the questionnaires before she interviewed them.

To analyze the data from the questionnaires, SPSS was used to calculate the frequency and percentage of each questionnaire item.

To analyze the data from the open ended questions, a content analysis was used. The data was interpreted by referring to the related literature review to be able to get a

more in-depth result. Table 3.2 shows a full list of questionnaire survey and classroom observations completed.

Interviews were conducted a week after the observation. All interviews were in Bahasa Indonesia. Questions for the interviews were basically derived from the questionnaires and the observations. A semi-structured interview was conducted in this research. The researcher prepared some questions to refer to as guidelines before entering the interview so that she had the general idea of where the interviews had to go. However, she let topics determine the flow of the interviews rather than working through a list of questions in a predetermined order. By conducting the semi-structured interviews, the interviewer had a great deal of flexibility, and in this way, the interviewee had a degree of power and control over the course of the interview.

Interviews were audio-recorded. Before analyzing the content of the interviews, the researcher transcribed and translated them into English. The number of engineering lecturers interviewed were 10 (one lecturer from each engineering department) and there were 3 English instructors who were asked their perceptions on the English language needs of the engineering students. The researcher also interviewed one English language course coordinator from the Department of General Courses who was one of the staff from the English Department. The transcripts of interviews with the teachers are shown in *Appendix C.1-10*

Table 3.2 Questionnaire Surveys and Classroom Observations

Faculty	Department	Course	Course Code	Year of Study
Civil Engineering and Design	Civil Engineering	Concrete Technology IIB	C1	3
Civil Engineering and Design	Civil Engineering	Structural Analysis IV	C2	2
Civil Engineering and Design	Architecture	Structure	C3	2
Industrial Technology	Electrical Engineering	Electric Current Machines	C4	3
Industrial Technology	Electrical Engineering	Electronic Circuit Analysis II	C5	2
Industrial Technology	Electrical Engineering	Fuzzy Sets	C6	4
Industrial Technology	Mechanical Engineering	Energy Conversion	C7	3
Industrial Technology	Mechanical Engineering	Mathematics IV	C8	2
Industrial Technology	Mechanical Engineering	Forming Analysis	C9	4
Industrial Technology	Industrial Engineering	Production Planning and Control	C10	3
Industrial Technology	Industrial Engineering	Engineering Economics	C11	2
Industrial Technology	Information Science	Human Computer Interaction	C12	3
Industrial Technology	Information Science	Computer Organization	C13	2
	Department of Foundation Courses	English A English B English C	C14	all

The number of students interviewed was 5, and all of them were first-year students from different engineering departments. The complete transcripts of interview with students are shown in *Appendix D.1-3.* Table 3.3 below shows the interviewee's profile.

Table 3.3 The Interviewees' Profiles

Data Code	Subject	Department	Position	Educational Background	Teaching Experience
L1	Concrete Technology	Civil Engineering	Vice Dean	Ir.(Bachelor in Engineering);M.T.	18 years, 4 months
L2	Structure	Architecture	Dept. Head	Ir.(Bachelor in Engineering);M.T.	25 years
L3	Energy Conversion	Mechanical Engineering	Secretary of the Dept.	Ir.(Bachelor in Engineering);M.S.	10 years
L4	Electric Current Machines	Electrical Enginering	Secretary of the Dept.	S.T.(Bachelor in Engineering)	8 years
L5	Engineering Economics	Industrial Engineering	Head of the Dept.	Ir.(Bachelor in Engineering); M.Eng	8 years
L6	Computer Organization	Information Science	Head of the Dept.	Ir.(Bachelor in Engineering); M.Eng	15 years
L7	English	Foundation Courses	English Instructor	B.A.	14.5 years
L8	English	Foundation Courses	English Instructor	B.A.	12 years
L9	English	Foundation Courses/English	Coordinator/senior lecturer	B.A. (in English and Education)	2 years in DFC, 15 years in English Dept.
L10	English	Foundation Courses	English Instructor	B.A	15 years

Classroom observations were carried out to learn how English is used in the lectures/oral presentations as well as in the handouts prepared by the lecturers. It was done to find out the nature of academic tasks that the students were required to perform and to understand the teaching and learning pattern in the engineering courses and also in the English course.

While sitting in on the selected engineering lectures, the researcher took notes and paid careful attention to when and how the lecturers used English in their oral presentations and how the English textbooks/handouts were used by the lecturers/students.

After observing, sometimes the researcher shared her comments with the lecturer (i.e., students were shy to ask questions in class, but instead, they went to see the teacher in person after the class ended). The sample of classroom observation field notes in engineering courses can be seen in *Appendix E.1-3.*

Textbooks, handouts as well as course outlines from the English course as well as from the engineering courses were collected. Samples of engineering course syllabus and lecture handouts can be seen in *Appendix F and G.* The purpose of this analysis is to investigate the level of difficulties that learners encounter in dealing with specific generic demands especially in the area of engineering.

Table 3.4 below shows the complete list of texts analyzed.

Table 3.4 Textual Analysis

Faculty	Department	Course	Texts Collected
Civil Engineering and Design	Civil Engineering	Concrete Technology IIB	Handouts, textbooks
Civil Engineering and Design	Civil Engineering	Structural Analysis IV	———
Civil Engineering and Design	Architecture	Structure	Course outline, handouts, textbooks
Industrial Technology	Electrical Engineering	Electric Current Machines	Course outline, handouts, textbooks
Industrial Technology	Electrical Engineering	Electronic Circuit Analysis II	Course outline, handouts, textbooks
Industrial Technology	Electrical Engineering	Fuzzy Sets	Course outline, handouts, textbooks
Industrial Technology	Mechanical Engineering	Energy Conversion	Handouts, textbooks
Industrial Technology	Mechanical Engineering	Mathematics IV	Course outline, handouts, textbooks
Industrial Technology	Mechanical Engineering	Forming Analysis	Handouts
Industrial Technology	Industrial Engineering	Production Planning and Control	Handouts and textbooks
Industrial Technology	Industrial Engineering	Engineering Economics	Course outline, handouts, textbooks
Industrial Technology	Information Science	Human Computer Interaction	Course outline, handouts
Industrial Technology	Information Science	Computer Organization	Course outline, handouts, textbooks
	Department of Foundation Courses	English A English B English C	Textbooks

3.7 Conclusion

This chapter discussed the importance of data collection methods and instruments in conducting a needs analysis. The design and procedures applied in the present needs analysis were also described.

CHAPTER 4

FINDINGS

This chapter presents the engineering students' English Language needs at Petra Christian University. The learners' needs are classified into the perspectives of the students, the engineering lecturers, and the English instructors. The presentation is divided into perceptions derived from both quantitative data (surveys) and qualitative data (semi-structured interviews). The results of the classroom observations and text analyses are also presented.

4.1 Quantitative Data: Questionnaire Survey

4.1.1 Students' Perspectives

Four hundred and seventy undergraduate students from all engineering sub-disciplines took part in this research. Electrical engineering students (25%) comprised the greatest number of participants (Table 4.1).

Table 4. 1
Number of Students from Each Sub-discipline (N=470)

	Frequency	**Percentage**
Civil engineering	64	14%
Architecture engineering	31	6%
Electrical engineering	116	25%
Mechanical engineering	94	20%
Industrial engineering	92	20%
Information Science	73	16%
Total	**470**	**100%**

The majority of the respondents were sophomores (44%), and only 11% were seniors. Significantly more male students (76%) participated in the survey. Fifty two percent of the subjects received 80-60 (on a hundred–point scale) on their English public examination (DANEM). Most of the participants (55%) belonged to the age of 21-24. Half of the respondents graduated from secondary schools in Surabaya. Only 10% of them attended a private English course outside the campus.

To explore the students' perceptions about the role of English for their engineering studies, this study asked the students how important English was for them. They were also asked to identify the most important skill for them to improve, the English language problems they faced, and the tasks required by the engineering instructors to be done in English.

In response to the question how significant English was for their studies, 369 (80%) out of four hundred seventy students agreed that English was important or very important. Only 95 of them (20%) said that it was somewhat important.

When asked further which English skill(s) were the most important to improve (students could choose more than one skill), speaking (76%) was perceived to be the most important skill.

Table 4.2 below depicts which English skills students needed to improve.

Table 4.2
Most important skill(s) to improve

Skills	Frequency (Percentage)
Speaking	355 (76%)
Listening	102 (22%)
Reading	94 (20%)
Grammar	70 (15%)
Writing	37 (8%)

In reply to the question what English problem(s) being encountered, students indicated that in learning English, limited vocabulary, poor speaking and grammar skill were the main problems that they were facing (Table 4.3).

Table 4.3
English problems faced by students

Problems	Frequency (Percentage)
Limited vocabulary	337 (72%)
Poor speaking skill	250 (53%)
Poor grammar	243 (52%)
Poor listening skill	201 (43%)
Poor understanding of cultural context	111 (24%)
Poor writing skill	75 (16%)
Slow speed reading	71 (15%)
Poor understanding of graphs	68 (15%)
Poor reading skill	48 (10%)
Other problems	22 (5%)

Besides reading engineering textbooks, Table 4.4 below shows other tasks that were required to be done in English. According to the majority of the respondents, they needed to understand technical (engineering) terms and make a summary of the readings in English.

Table 4.4
Tasks required to be done in English

Tasks	Frequency (Percentage)
Read engineering textbooks	346 (74%)
Understand technical terms	280 (60%)
Make a summary of the readings	95 (20%)
Do tests	61 (13%)
Present reports	49 (10%)
Write research reports	43 (9%)
Other tasks	26 (6%)
Do discussions	23 (5%)
Write lab reports	23 (4%)

Table 4.5 below illustrates the percentage of English reading assignments given by the engineering lecturers. Students reported that engineering lecturers assigned them a limited number of English reading assignment (less than 50%).

Table 4.5
English reading assignments in engineering courses
(N=470)

Percentage of reading assignment	Frequency (Percentage)
26-50%	191 (41%)
0-25%	168 (36%)
51-75%	85 (18%)
76-100%	25 (5%)

In terms of reading skill, students revealed that reading comprehension and paraphrasing were their two main areas of strengths, whereas they needed to improve their reading speed and also skimming and scanning skills the most (Tables 4.6 and 4.7).

Table 4.6
Area of Strength(s) in Reading

Area of strength	**Frequency (Percentage)**
reading comprehension	271 (58%)
paraphrasing	164 (35%)
skimming and scanning	148 (32%)
reading speed	114 (24%)
note-making	83 (18%)
summarizing	75 (16%)
understanding and analyzing graphs	68 (15%)
outlining	11(2%)

Table 4.7
Area of Weakness(es) in Reading

Area of Weaknesses	**Frequency (Percentage)**
speed reading	183 (39%)
skimming and scanning	144 (31%)
paraphrasing	114 (24%)
summarizing	106 (23%)
note-making	101 (22%)
understanding and analyzing graphs	98 (21%)
reading comprehension	96 (20%)
outlining	88 (19%)

When asked about the difficulty level of various English texts, students indicated that background information readings, handout for lectures, and reading assignments were neither difficult nor easy. They revealed that engineering textbooks and journals were difficult/ very difficult. However, they viewed e-mail as easy/very easy (Table 4.8).

Table 4.8
Students' Perceptions on Difficulty Level of Texts (in percentage)
(N=470)

	Very easy	**Easy**	**Neither difficult nor easy**	**Difficult**	**Very difficult**
Engineering textbook	1	6	39	41	13
Hand-outs for lectures	2	19	50	25	4
Reading assignments	1	15	50	28	5
Internet web page	4	29	43	20	5
Reference books	1	11	37	39	12
Background information	3	20	52	22	3
Engineering articles	2	12	40	38	7
Recommended textbooks	1	10	44	36	7
Engineering journals	1	8	42	39	9
Instructional software	6	26	34	24	10
E-mail	21	42	27	8	2

Regarding language preference for their readings, a significantly great number of students surveyed, (384 students, or 82% of the total respondents) chose their first language, Bahasa Indonesia.

Three hundred and fifty nine (76%) engineering learners viewed English materials used in the English course should be related to their disciplines.

When asked further about what percentage of materials used in the English course should be linked with engineering, quite a number of students (35%) said that more than half of the whole materials should be about engineering (Table 4.9).

Table 4.9
Percentage of English materials relevant to engineering studies
(N=470)

Percentage of relevant materials	**Frequency (Percentage)**
0-25%	100 (21%)
26-50%	143 (30%)
51-75%	165 (35%)
76-100%	58 (12%)

A vast majority of students seemed to be in favor of both a general English course and a more specific English for engineering purposes course. However, four hundred and five students (86%) chose English for engineering while three hundred and forty seven students (74%) preferred General English.

Regarding how an English for engineering purposes course should be offered, slightly more than half of the respondents (55%) said that they needed the English course at the earliest stage of their undergraduate study. Two hundred and seventy one (58%) learners revealed that English for Engineering purposes should be offered as a required course.

The number of students who stated that the current English course was not very helpful for them to be successful in their engineering studies was not significantly higher (51%) than those who said that it was useful. However, quite a number of students (62%) revealed that their English skills did not improve after attending the English course.

Among respondents who said that the English course enhanced their English skills, 20% of them believed that their reading skill improved after attending the English course.

4.1.2. English Instructors' Perspectives

Four English instructors, all female, were surveyed and interviewed. They had been teaching for more than 10 years at the university (Table 4.10).

During the teaching term when the data were collected for this study, only one instructor was responsible for the engineering students. Yet, all respondents had had the experience of teaching engineering students before.

Table 4.10
Profiles of English Instructors
(N=4)

	L7	L8	L9	L10
Gender	Female	Female	Female	Female
Age	40-49	40-49	50 and above	40-49
Educational Background	B.A.	B.A.	B.A.(in English and Education)	B.A.
Teaching Experience	14.5 years	12 years	2 years in DFC, 15 years in English Dept.	15 years

DFC= Department of Foundation Courses

The majority of instructors indicated that the course was a general English course. The aim of the course was to enable students to read textbooks used in the engineering lectures. The length of the course, which was a credit-bearing course, was 2 hours per week. The one who designed the course was the course designer. Together with the instructors, the course designer developed the materials. The type of current materials used was a published text. It was used as a course book. The average level

of students' English proficiency was intermediate. There was no departmental collaboration with the engineering departments. All of the respondents indicated that the current English course was relevant to the students' engineering studies. Only the coordinator indicated that the English course was not very helpful since it was focusing on general English. When asked further about how the demand of the course was identified, whether there was an attempt to analyze needs and how course objectives were identified, all English instructors revealed that they did not know the answers. Only the course coordinator said that there was an attempt to investigate students' needs and the course demand was established based on the research. Surveys for students and prospective employers, and focus group discussions for faculty and English instructors were carried out to collect input.

The English instructors pointed out that English was very important/important for the students' engineering studies. English was also deemed important for the students' future career. Instructors perceived reading as the most important skill to improve because students needed to read engineering textbooks. Writing and speaking were the least needed English skills by the students. When asked about the reason of the most needed and the least important skill(s), only two instructors responded. One stated that all skills were actually important and the other explained that speaking was important in terms of reporting/retelling what they had already read (in English reading instruction). Instructors were concerned about the students' grammatical reading and vocabulary skills the most.

When asked about language used for engineering core-texts, instructors had various answers–first language, English and also both languages.

All of the English instructors surveyed responded that English course materials had to be relevant to engineering. Two instructors said that more than 50% of the materials should be related to engineering. All instructors indicated that first year students needed a general English course. A more specific English course was needed for different engineering sub-disciplines, according to two instructors. However, the other two respondents said students did not need it. One instructor said fist year students needed a more specific English course and two said that third year students needed the specific course. Most of the instructors agreed that the English course had to be offered as a required course instead of an elective course.

4.1.3 Engineering Lecturers' Perspectives

There were four males and two female lecturers who were surveyed. Most of them had more than 8-year teaching experience (Table 4.11).

All of the engineering lecturers surveyed were of the opinion that English was important/very important both for the students' academic and vocational purposes.

All of the lecturers indicated that students needed to improve their reading skill the most. Three out of six engineering lecturers surveyed indicated that speaking skill is also important. The reasons why reading skill was important is that students needed to understand the engineering materials such as textbooks and engineering terminology which were in English.

Table 4.11
Engineering Lecturers' Profiles (N=6)

	L1	L2	L3	L4	L5	L6
Gender	M	M	M	F	F	M
Age	40-49	50 and above	30-39	30-39	30-39	40-49
Educational Background	Ir. M.T.	Ir.	S.T	Ir. M.S.	Ir. M.Eng	Ir. M.Eng
Teaching Experience	18 years, 4 months	25 years	8 years	10 years	8 years	15 years
Department	Civil	Architecture	Electrical	Mechanical	Industrial	Info Science
Position	Vice Dean	Dept. Head	Secretary of the Dept.	Secretary of the Dept	Dept. Head	Dept. Head

Ir./S.T.= (Bachelor in Engineering)
M.T.=(Master of Engineering)

A number of engineering terms did not have accurate translation versions; therefore, it was better for the students to understand the English version. One lecturer stated that grammar was also the most important skill for students to improve. Two lecturers said that speaking was the least important to improve and other two instructors revealed that grammar was the least significant skill. The majority of the lecturers said that students had problems with vocabulary and writing. English tasks required to be done by students were reading engineering textbooks and understanding engineering technical terms.

More than seventy percent of the core-textbooks used in engineering lectures was in English, while the percentage of reading assignment in English given to the students was around 25-75%.

In reply to the question "how difficult are the following texts to your students?" most of the lecturers responded that it was neither difficult nor easy for the students to read the Engineering textbooks, handouts for lectures, reading assignments and internet web pages. Table 4.12 below also illustrates that lecturers viewed engineering journals to be very difficult for students.

Table 4.12
Lecturers' Perceptions on Difficulty Level of Texts

	very easy	easy	Neither difficult nor easy	difficult	Very difficult
engineering textbooks		1	3	2	
handouts for lectures	1	2	3		
reading assignments			4	2	
internet web pages			4	2	
reference books			3	3	
background information		3	3		
engineering articles			3	1	2
recommended textbooks			3	2	
engineering journals			2	1	3
instructional software		1	4	1	
e-mail		1	5		

Lecturers stated that problems in reading encountered by students were related to vocabulary, grammar (sentence structure), and comprehension. One lecturer felt that having many calculations (numbers) in the readings did not cause students a great deal of problems; however, those which included a substantial amount of text could cause difficulties to the students. In contrast with those indicating that language problems was the cause of the students' reading difficulties, a lecturer mentioned that the content of the subjects itself that was problematic to the students.

The lecturers revealed that the first language (Bahasa Indonesia) was mostly used in lectures and English was used only as far as engineering terms were concerned. Lecturers prepared handouts for the lectures. The language of instruction that was used in the lecture, Bahasa Indonesia, was mostly used in the handouts, and only engineering terminology was in English. When developing the handouts the lecturers tried to make the English textbooks more comprehensible to students by presenting the main ideas in the first language.

Interestingly, when asked what language they preferred to use for class materials, most of the lecturers said that it was better to use English. In response to open-ended questions, the lecturers provided reasons why they would prefer English to be used for textbooks and materials in engineering classes. The reasons given by the instructors were the following:

- to prepare the students for their future in the globalization era;
- most of the materials writers are English native speakers, if the books are translated by those people not coming from the same discipline, they will not come up with an accurate translation version; and
- English can provide students with a more in-depth and elaborated discussion and concepts.

Engineering lecturers mentioned that English course materials should be relevant to engineering. When asked about the percentage of relevant materials, lecturers indicated that more than 50% of the materials should be about engineering. Lecturers stressed that the English course for engineering purposes was more helpful for engineering students, even though they believed that the current General English

course offered was quite useful to the students. Lecturers also noted that students needed to attend a compulsory engineering specific English course as soon as possible, in their first academic year. When asked to give recommendation for the improvement of the English course, lecturers suggested that the English instructors should be familiar with engineering subjects, so that it can generate students' motivation. A more sub-discipline specific English course would be more helpful to the students. Emphasis and focus had to be put on engineering terminology, sub-discipline reading comprehension, summary writing. Other skill such as speaking was also suggested to be incorporated in the course.

4.2 Qualitative Data: Semi Structured Interview

Semi-structured interviews were carried out to gather information on the engineering students' English needs. The findings are divided into three parts: students' perspectives, engineering lecturers' perspectives and also English instructors' perspectives.

4.2.1 Students' Perspectives

Five first-year engineering students were interviewed and each interview lasted for about 20 minutes. Interviews were conducted in Bahasa Indonesia.

When asked how important English was, all students responded that it was important. However, they gave different reasons for this. For example, one student said that it was important during the final year, when they had to search for information for their final project.

Yes, both general and specific. But for our studies, it's more engineering specific, it is used until the final year when we are searching for information for our final project. English for engineering is important. (Student 1)

Another said that engineering students needed to read English textbooks. Even though some books had an Indonesian version, they said that the translation was not good enough to express the meaning precisely.

Many literature/references are in English, from overseas, those in Bahasa Indonesia are the translation version, so having the same content actually but different books. So, I think English is important since the translation version cannot express the meaning accurately. (Student 1)

Students indicated that they needed listening and speaking for their future career. For their engineering studies, students said that they needed vocabulary and reading (comprehension and summarizing) the most.

Students expressed the view that those who were not proficient enough in English would have difficulties in being successful in their engineering studies. However, students would be able to survive and follow the lectures and even get good grades although they did not have sufficient English skill. They also said they needed more listening and speaking practice to prepare for their future career.

Students revealed that instructors seldom or even never assigned any English reading assignment. Although students knew the necessity of reading the English texts, they seldom did it. Students revealed they would still be able to do the test even though they had not read the English textbooks.

Students felt that they encountered problems in reading the textbooks, therefore, they seldom and almost never read the books. However, one student said that she did not have any problem with comprehension; she just had problems with vocabulary. Another student said that she knew architecture students sometimes needed to present in English. Another said the difference would lie in the terminology.

Students stressed that the current English course was not helpful to them since the materials were general and sometimes were the same as those they got from high school.

So far we have got the general one, so I think we are just repeating what we have got from high school. Our skill is not improving, but what we need is engineering specific. (Student 2)

The most common classroom activity in the English class was providing answers to the questions in the book. The instructors sometimes gave additional comprehension questions.

A student suggested that instructors incorporate more speaking and listening practice in the English class.

I think students should be encouraged to speak and to listen more. I think that's very important. So they can speak with foreigners. So far, if we focus on grammar and reading only, we cannot communicate well, especially if the other party speaks very fast. (Student 2)

Technical vocabulary exercises were also needed. Since students had already learnt general English at secondary school, so a more discipline specific English course would be more useful to them. General English could be learnt either by self-study or joining English private courses outside the university.

I think ESP is important for the studies, since it is no use to study General English at school. It's the same as we got in high school. If the students feel the needs to improve their General English, they would attend the private course outside, not in here, since outside is surely better. First, it's more intensive for our English course, it's only 2 hours per week. For courses outside, it can be twice or three times every week. The instructors are different. For DFC (Department of Foundation Courses) it might be good, but for the private course outside, the aims are different and the instructors are more capable to ask the students to speak, to think more creatively in English, so I think it's different. (Student 3)

Students stressed that collaboration between engineering lecturers and English instructors would be helpful since the English instructors could be better informed about the engineering terminology necessary to be learnt by the students.

Some students expressed their concerns that it might be very difficult for students to understand the lectures if they were conducted in English. But some would support the implementation of English as a Medium of Instruction if it were only for particular engineering classes. The level of difficulty of the instruction had to be adjusted with the students' level of proficiency.

4.2.2 English Instructors' Perspectives

One English coordinator as well as three English instructors who taught non-English department students, were interviewed. Only one instructor was teaching engineering students when the data collection was still in process. The other three taught students from different majors, but all of them had the experience in teaching engineering students.

Instructors indicated that the most significant problem students encountered from the current English course materials related to the vocabulary. In addition to the fact

that the difficulty level of the vocabulary was quite high, students also had difficulties in recognizing which part of speech a certain word belonged to.

Instructors argued that the materials used did not reflect the engineering students' current needs. Students needed to acquire engineering terminology in lectures; however, the current English course materials were about general topics like politics, economics, and the like. Nevertheless, instructors believed that the general knowledge was still important and useful to the students. Furthermore, the recent course book (*Building Bridges: English for Academic Purposes*) provided a great range of varieties of topics and activities to enhance the students' English skill.

The English course coordinator argued that the reason why the book was more about general topics was because it was designed based on a research carried out in 1998 to investigate the English needs of non- English department majors at Petra Christian University. As the coordinator stated in the interview, the results concluded that the society demanded university graduates who were well prepared in communicating in English in their future jobs.

We interviewed the engineering departments and the prospective employers. From the research it was found that students were expected to be able to communicate in English. University graduates were supposed to able to speak good English and write a report in English. So we decided to change the materials, not only reading to prepare students to read English textbooks, but now we give the students a more general reading, and give more integrated skill exercises, speaking, writing, reading. Two credit hours every semester will not be enough. That is why some departments give their own additional English course for the students, like the industrial engineering for instance (Lecturer 9).

The English instructors reported that before the recent course book was developed, the English course materials were sub- discipline specific. Engineering students were

exposed to engineering related topics and so were other majors. The English instructors revealed that the past materials were more relevant and helpful to the students' disciplines.

Most of the respondents indicated that due to the time constraints, they did not/ seldom gave additional materials to the students. English instructors were pressured to finish the materials assigned. However, an instructor noted that she sometimes gave additional grammar exercises, such as parts of speech. The instructor provided the exercises since she felt that recognizing different parts of speech was a significant problem for students. She sometimes included additional reading comprehension exercises. She further suggested that additional materials had to be those related to the students' disciplines. It could give students a more exposure to a major-specific topic.

So far, instructors revealed that there was no collaboration between the Department of Foundation Courses and engineering departments. One instructor said that she would have an informal conversation with some of the engineering lecturers if they happened to meet. However, there had never been any significant discussions/ meeting among the departments to talk about the students' needs.

Instructors seemed to have the opinion that English skills other than reading were not really needed by the engineering students to be successful in their engineering studies at this moment.

Instructors concluded that students lacked paraphrasing skills. Students tended to copy/to quote the answer for comprehension questions directly from the text. An instructor complained that sometimes students even did not read the text, but used the following strategy instead:

Yes, mostly will quote. Some of them do like the example I gave earlier. There are five questions and they divide the reading, which is quite long, into five parts, and then they give the first part as the answer for question one, the second part for question number two and so on, so the whole passage is used as the answer. (Lecturer 7)

Another instructor complained about students' low motivation level. Even when an English instructor applied a more interactive method, like a group work, students seemed to be reluctant to participate, as was mentioned by the instructor:

L8: *When we meet in class the following week, I ask them to work in-groups. Supposed there were 50 people, I will divide them into 10 or 6 groups, smaller groups, and I gave each group a turn. For example group 1 is responsible for paragraph 1 and group 2 for paragraph 2 and so on. And when they read the paragraph, I listened to them. I listened and I gave them feedback, especially if there was important point that they did not mention. That was the way. But many did not seem to care.*
R: *Did not care in the sense that...*
L8: *They were talking with others and did not listen when their friend had the turn to present in front of the class.*
R: *You walked around to observe them while they were working?*
L8: *And I could see that not everybody in the group was working. (Lecturer 8)*

English instructors were not very much informed about the students' writing skill because there was not much writing practice incorporated in the English class. However, instructors said that in terms of content, students had no problem in writing, it was just that they still made grammatical mistakes.

Though the core-text being used was provided with speaking practice, group discussions were not implemented effectively since instructors complained about the little amount of time available. In one class, students even tended to use Bahasa Indonesia for discussion. The instructor revealed that if students were required to discuss in English they would fail the course.

L10: It's mixed sometimes in English sometimes in Bahasa Indonesia.
R: So you walked around the class when the students do the discussion?
L10: Yes
R: And they were using both Bahasa Indonesia and English?
L10: But they would mostly use Bahasa Indonesia.
R: Why would they use Bahasa Indonesia ?
L10: Because the focus is on reading comprehension, if the focus is on speaking then I am afraid the students would fail the course (Lecturer 10).

Instructors argued that both General English and a more engineering specific English course were important for students. For their current studies, subject specific English was important, but it would be too specific for students to be prepared for the outside world. Instructors indicated that students needed to know other things than their subjects.

In response to the question whether the materials for the English course should be related to engineering, instructors indicated that it should be related. Regarding the timing and length of the course, one instructor stated that students actually would need English more during the later stage of their studies.

Because in the past, it was given in the first semester and I remember some students asked me why it was given only for one semester and in the first semester. Whereas actually they would need English more during their second or third year of their studies, because during those semesters they were required to read more English textbooks. If it was given in the first semester, they took it as one of the school's requirement, the goal was to pass the exam, they did not really understand or know why English was needed. They thought it was better to have another English course in the later semester. (Lecturer 10)

English instructors indicated that for students' current engineering studies, an English for Engineering course was more helpful, and a general English course was more needed for the students' future career.

4.2.3 Engineering Lecturers' Perspectives

The first area of questioning was about the importance of English for the students' engineering studies. Every engineering lecturer interviewed had the same opinion that English was very important for meeting the students' academic demands. It is interesting to note here that all of them expressed similar reasons. English was important because the required textbooks for almost every engineering lecture was in English. Lecturers indicated that even though Indonesian versions of the textbooks were available in bookstores, they did not provide students with accurate translations. Therefore, they did not recommend students to read the translated version. Lecturers said that it was better for students to get used to and to be familiar with the English engineering terms. Another reason given was that students needed English to update themselves with current information which mostly derived from outside Indonesia. If they waited for the Indonesian version, it would be too late.

I think it is very important since the development of electrical engineering mostly comes from outside, compared with from inside. So, if we want to update ourselves with the information, we have to know English, at least, how to read English discourse. As for the journal, it would be too late to wait for the Indonesian version. Especially in this globalization era, so many expatriate workers coming, and if we, from Indonesia can communicate using English, we can be more prepared to compete with other electrical engineers / technicians from outside. (Lecturer 4)

The primary English needs for students as perceived by their subject lecturers was the reading of English textbooks. Some of the lecturers said that it was an extra bonus for them if students were proficient in oral English. The engineering lecturers further

pointed out that those skills were going to be crucial for the students to be able to survive in their future career.

Lecturers had different answers when asked whether students could be successful in their engineering studies without adequate English skills. One lecturer revealed that as long as his students regularly attended his lectures, which were conducted in Bahasa Indonesia, they would understand the concepts. Another stressed that it would be hard for the students if they depended on attending her lectures only. Students also needed to put their efforts to read the required English textbooks to pass the course. An industrial engineering lecturer who taught the course *Economics Engineering* said that students would face difficulties if they ignored the English core-texts. However, in the case of another course that she taught (*Industrial Chemistry)*, reading in English was not that important since that particular course introduced students to Indonesian laws and rules that governed Indonesian industries. That was why students did not need to comprehend any English textbook.

An information science lecturer noted that his students needed English skill to be able to do an English pre-test prior to every lecture. This test was aimed to assess the students' understanding of the lesson and it was written in English.

A civil engineering lecturer concluded that students had no significant problems in reading set textbooks. The main problem they encountered was technical vocabulary. Mechanical and electrical engineering lecturers complained that students' poor performance in understanding the core text was not due to the difficulty of the subject content, but to the poor language proficiency.

The one that I perceive to be the most important is reading, and if they can communicate (speaking) in English then it can be a lot better. But I see that the English proficiency of the students is still very low. Based on my experience, I asked them to read English textbooks, and then when I asked them to write the main ideas of what they were supposed to read, and actually it could be seen from the subheadings, they failed to do so. When I asked them, "Don't you think it is easy since you can just find the answers from the subheadings?" They said they just did not understand. So I even think their reading skills are very poor. So it is not the content that made them fail but the reading skill itself. (Lecturer 4)

The industrial engineering lecturer said that at first, students expressed difficulty when assigned to read English textbooks, but gradually they seemed to become familiar with them.

Yes definitely there were complaints, but it seemed like they get used to it... it's the same as the first time I gave them an English assignment...First, it saved me lots of work since I did not need to translate... I just took them from the textbook...and students just copied. That was my first goal, but other reason was for the students to learn. That was the goal. But at first they really complained. (Lecturer 5)

Interestingly, an information science lecturer noted that even though students had no complaints on the English reading assignment, he could not guarantee that they did not have any problems in their English reading skill. A number of students seemed to choose to read the Indonesian version of the textbooks assigned.

Basically, lecturers neither strongly recommended nor gave a number of reading assignments to the students. Although some lecturers indicated that students would face difficulties if they did not read the core-text, most of them seemed to feel that students still depended more on the handouts, or even the Indonesian version of the books. The number of reading assignments given still depended on the time available and also the kind of courses taught.

Only a civil engineering lecturer said that students' reading skill was adequate. The others complained that students needed to improve their reading skill.

Other than reading, lecturers did not seem to assign any other tasks that had to be done by the students in English. Some said they occasionally asked students to write a summary of the English textbooks read, or asked students to do tests in English; however, lecturers still gave students the freedom to choose whether they wanted to do it in Bahasa Indonesia or English.

The civil engineering lecturer also pointed out that civil engineering students needed to understand English due to the vast increasing usage of computers. Nowadays, engineering students were more and more dependent on computers. Structure calculation was no longer processed manually. He also expressed the importance of *productive* English skill for the students' future career. They needed to communicate in English with foreign consultants or assistant consultants. *Receptive* English skills were at least crucial for reading and understanding the related documents (ACI).

An architecture engineering lecturer stressed that complicated grammar was not needed instead, sophisticated technical vocabulary was needed to be acquired by students. A mechanical engineering lecturer emphasized that reading skill was more needed for a more advanced course. More reading assignments would be given at a later stage of the studies; fewer readings were assigned for students attending foundation courses. An industrial engineering lecturer, who happened to have an educational background other than in industrial engineering, revealed that there were no distinguished sub-interdisciplinary differences for English needs. Reading,

grammar and vocabulary were the most essential for students to learn. An Information Science lecturer reported that to be able to read fast was the primary English need for his students.

The majority of lecturers agreed that a suitable English course would be one that was related to engineering topics. The reason for the choice was that students could learn terminology that would be found in engineering textbooks/lectures. Lecturers assumed grammar taught in general English would be important though it might not be motivating to students since it did not have anything to do with their area of study.

I think for some cases, to motivate students in their engineering studies, the course should contain some "constructions" topics, if other topics are added, it is ok. Since I think it is not necessary to narrow down the topic too much – all terminology must be "constructions" specific. That is just to motivate since civil engineering students sometimes are too reluctant to study English, frankly speaking. They would say it has nothing to do with their major, whereas actually it is relevant, at least in the area of grammar. Grammar is necessary. (Lecturer 1)

However one lecturer expressed his concern that those teaching English for engineering students had to have an engineering background; the problem was that they might not have strong grammar knowledge like those having English as their background. Another reason given by the lecturers regarding their views on the importance of English for engineering for the students was that lecturers assumed students could learn grammar/General English from attending English private course outside the campus.

I think ESP is better. The students have already learnt General English in high school. By taking ESP, they can learn more about electrical engineering in specific. Since I think the language of magazine, literary work and textbooks are different. So I think it is better to be more specified in the engineering topic. And if I'm not mistaken, the required English course offered several years ago was ESP. I have no idea about the content since I never checked. But I remember when I was still a student here at

Petra, I remember the material was more on the electrical engineering topic. The topic was about atom, so it was specifically physics; not yet electrical engineering in details, so it was not General English, but specific to electrical, since General English can be learnt outside (private courses). (Lecturer 4)

A lecturer also noted that even the engineering department realized the importance of English for engineering to students, but due to administrative problems/reasons, it was difficult to administer that engineering–specific English course within the engineering department.

For now we ask the Department of Foundation Courses to handle the course. Due to technical problems, our department is not ready. Even the department needs a specific English course but we are not ready to administer by ourselves. (Lecturer 6)

In general, lecturers believed that an engineering specific English course would be more needed by the students.

4.3 Classroom Observation

Thirteen engineering classes were observed before the questionnaire distribution. Lectures were conducted in Bahasa Indonesia. The classrooms seated up to 70 students. The furniture in each classroom was moveable. The students sat on plastic chairs and had narrow desks to lean on. There was one student per desk. Each classroom had two whiteboards, an OHP, and a screen. Speaking in a formal teaching voice, the lecturer could not be heard by all students without the use of a microphone. All classrooms contained the same standard equipment.

Regarding the usage of textbooks and handouts in the engineering classes, the researcher found that most lecturers were using transparencies in their lectures. They

were in Bahasa Indonesia, and some technical terminology was in English. The teaching methodology applied was mostly lecturing, in which the instructor stood in front of the class, and gave lecture by referring to the transparency, which was the handout for the students. In other words, students had the copy of the transparency. Instructor-students interactions were found to be very limited and no group-work was used in class. In addition to listening to lectures, students had to do exercises in class. Lecturers went around the classroom to observe students and sometimes had to approach one/two students to answer his/her questions. After students finished with the exercises, lecturers discussed the answers with the students. Even though lectures were conducted in L1, technical vocabulary was given in English, and followed by the translation/explanation in Bahasa Indonesia. Reading assignments were very little since students would prefer studying from the handouts.

4.4 Text Analysis

To be able to understand the engineering students' English language needs, this study collected core-texts used in the engineering lectures, which were mostly printed in English. Lecture notes, instructors' handouts were also gathered to learn the students' needs from the textual perspective.

Most of the textbooks were published in the United States. Many of them were not the latest edition. The books ranged from 200-800 pages. Engineering lecturers assigned students to read only parts (some chapters) of the books. They were available in the library and lecturers had them. Most of the books were not available in the market, so students did not have the original copies of the books. The background

information of the textbooks used from different engineering sub-disciplines is listed in *Appendix I.*

As mentioned earlier, lecturers selected certain chapters to be used as lecture materials/reference. The selected chapters from the engineering textbooks used normally had particular features. The most common features were a high frequency of figures and tables in addition to text, and problems and exercises found almost at end of each chapter. Sub-headings could be found in all of the textbooks used in the lectures. Important points and key concepts were highlighted in many of the engineering textbooks used. Nevertheless, the textbooks did not normally state the goals at the beginning of each chapter. Only some textbooks provided the learners with summary of each chapter. No textbook had glossaries. Notes at the end, references and further reading were rarely found in every chapter. The complete list of chapter features can be seen in *Appendix J.*

All lecturers who took part in this study used handouts in class. Handouts were designed from the main points of the core-textbooks. The main points/ideas were translated into Bahasa Indonesia and some engineering lexical items were written in English *(Appendix G1-G5).* From the sample of handouts collected and analyzed, there was only one handout that was completely written in English *(Appendix G6).* The following excerpt was taken from a handout used in the course *Production and Planning Control (Course 10):*

***Safety stock** dapat digunakan dalam MRP, tetapi hanya pada **level finished product** saja. Sedangkan untuk komponen lain tidak dianjurkan. (Appendix G5)*

The excerpt below was taken from the handout used for *Forming Analysis (Course 9):*

Primary Forming *merupakan "penciptaan" bentuk baru benda padat dari suatu cairan logam atau gas yang memiliki bentuk tidak menentu. Terjadi disini satu ikatan baru materi benda padat. (Appendix G3)*

The following extract was from the course *Concrete Technology (Course 1):*

Metode Alur Gaya Dalam ***(Load Path Method):***
Beberapa hal yang perlu diperhatikan pada Metode Alur Gaya...Alur gaya merupakan garis aliran (***stream line****) yang tidak saling berpotongan. (Appendix G1)*

Some selected excerpts/chapters from the required textbooks (which was in English) were sometimes compiled/put in the handouts.

4.5 Conclusion

This chapter has presented the results of both qualitative as well as quantitative data from the perspectives of engineering students, lecturers, and English instructors. The three parties had similar agreement on the important role of English, however, they had different viewpoints concerning important English skills to be improved by students or English problems faced by them. Based on classroom observation and text analysis, the usage of English in students' engineering studies merely involved reading textbooks and acquiring technical vocabulary.

CHAPTER 5

DISCUSSION

This chapter discusses the current English needs of engineering students at Petra Christian University based on the findings of this study. The effectiveness of the English course offered for the engineering majors is also determined. The last section is devoted to identification of the gap between what the engineering students need to learn and what they have been taught.

5.1 The Current English Needs of Engineering Students at Petra Christian University

5.1.1 Immediate versus Delayed Needs

All students and teachers taking part in this study are unanimous in the belief that English is important for engineering students. This belief is echoing the findings of Lie & Limuil (1998) regarding the English language needs of non-English department majors at Petra Christian University. However, students' perceived needs incline more towards their *delayed needs* rather than *immediate needs*. It is necessary to distinguish the needs into those two categories since the Indonesian setting in general and the Petra Christian University context in particular are in parallel with the fourth type of situation proposed by Dudley–Evans & St. John (1998). For example, all subject courses at Petra Christian University as well as in other Indonesian schools are taught in the national language, Bahasa Indonesia, while English is taught as a subject. The students' immediate needs

include reading engineering textbooks in English and understanding engineering technical vocabulary. Although lectures in engineering classes are conducted in Bahasa Indonesia, teachers reported that more than seventy percent of the required textbooks in engineering studies are in English. Students and teachers have similar opinions that in addition to reading textbooks and understanding engineering lexical items, there are no other tasks that are required to be done in English. Even though teachers give lectures in the national language, they have to switch to English when introducing engineering terms. Both students and teachers agree that the terms do not have accurate Indonesian translation; therefore the English version is preferred.

As pointed out, the students' delayed needs refer to the necessity to use English during their final year of studies or in future work (Dudley–Evans & St. John, 1998). Searching for information in English to complete the final project is one such instance. Students have to be updated with current information, which mostly come from outside Indonesia. The globalization era and the growth in information technology demand that students understand English more. Communicating in English with expatriate colleagues or employers in the future occupations is another instance of students' delayed needs.

The main reason for choosing the English books was because the development of information and knowledge especially in the area of engineering was from outside. Local materials would be outdated. As was stated by an engineering lecturer:

I think it is very important since the development of electrical engineering mostly comes from outside, compared with from inside. So, if we want to update ourselves with the information, we have to know English, at least, how to read English discourse. As for the

journal, it would be too late to wait for the Indonesian version. Especially in this globalization era, so many expatriate workers coming, and if we, from Indonesia can communicate using English, we can be more prepared to compete with other electrical engineers / technicians from outside. (Lecturer 4)

Engineering students' English needs are derived more from delayed needs rather than immediate needs. When surveyed and interviewed, both students and teachers revealed that the engineering teachers have required few reading assignments in English. Students felt that attending lectures and learning from the teachers' notes/handouts (which were a mix of English and Indonesian, with English being used as far as engineering terminology was concerned) were sufficient to pass the engineering courses. In theory, students need to focus on the reading skill; in practice, the reading of English textbooks or articles may be little more than an optional task and students may be more motivated by materials that focus on other skills (Dudley–Evans & St. John, 1998). It can be concluded that the demand to meet the immediate needs is relatively low.

5.1.2 Different Perceptions between Students and Teachers

Students are more concerned with the delayed needs while engineering lecturers and English instructors emphasize students' immediate needs. Students perceived speaking and listening skills to be the most important English skills to improve. They felt that productive skills were needed to prepare themselves for future jobs. However, teachers perceived reading, grammar and vocabulary skills (receptive skills) to be the most important ones to be improved.

The different perceptions show that while students are concerned more about their delayed needs, teachers seem to put more attention on students' immediate needs. In particular, students were concerned more about productive skills needs while the teachers tended to focus more on the receptive skills.

The different perception of needs between students and teachers is not uncommon in the area of English for Specific Purposes (Hutchinson & Waters, 1987). One possible explanation for the difference is that while teachers focus on the students' *objective needs*, the learners, on the other hand, express their *subjective needs*. For example, what the teachers consider are the actual needs of students in particular situations (e.g. use of English in engineering courses), while the learners are more concerned with their wants, desires, and expectations (e.g. desire to use English to communicate orally). In the present study, for instance, the objective needs of the engineering students based on their teachers' point of view were reading, grammar and vocabulary skills. In contrast, as an indicator of their subjective needs, engineering students expressed the desire to learn speaking and listening more than other English skills.

Another explanation for the difference is that perhaps in an EFL setting, there is no actual need to use English productively (speaking and listening) outside the classroom. Naturally, teachers do not base a course on needs that do not exist. Practical experience, personal philosophy and conception of their role heavily influence teachers' views of needs (Brindley, 1989; Graves, 2000). While teachers are preoccupied with the language needs of learners in real-life communication situations, learners' perceptions of their

needs may be much more influenced by cognitive and affective factors such as personality, confidence, attitudes, wants, and desires.

Dudley–Evans & St. John (1998) stated that this mismatch between the institution's perceptions and students' views could result in a lack of students' motivation, disillusionment of teachers, as well as a waste of resources. The reason for students' low motivation level is probably because they will be able to perform well in their engineering studies even though their English language proficiency is not high. High proficiency in English does not guarantee that they can be successful in their engineering studies. The academic tasks required to be completed in English are very few. Students are not motivated to learn English for understanding lectures or taking tests. However, teachers felt that it would be better that students can have adequate English skill, at least receptive skill to be able to understand English references. Teachers implied that attending lectures is not enough.

The students' low motivation level can be seen from the limited effort that students make to enhance their English language skill. Students' awareness of the importance of English is not accompanied by any significant attempt to overcome their English problems. They reported that materials covered in the current English course for all non–English majors at the university were mostly a repetition of those from the secondary school English course. Both students and teachers believed that General English like the one offered in the recent English course could be learnt by attending a private course in English outside the university.

We learn General English from secondary school, if we understand those we had in secondary school, then for the rest, we can improve our English by self-study, joining private tuition for instance. (Student 1)

An engineering lecturer also indicated that there might be an overlap if students learn General English in the university.

The students have already learnt General English in secondary school. By taking ESP, they can learn more about electrical engineering in specific. Since I think the language of magazine, literary work and textbooks are different. So I think it is better to be more specified in the engineering topic. And if I'm not mistaken, the required English course offered several years ago was ESP. I have no idea about the content since I never checked. But I remember when I was still a student here at Petra, I remember the material was more on the electrical engineering topic. The topic was about atom, so it was specifically physics; not yet electrical engineering in details, so it was not general English, but specific to electrical, since General English can be learnt outside (private courses). (Lecturer 4)

Students were not attentive and motivated in the English class. They were ignorant when their peers were having the turn to present in front of the class. They were talking with others and did not listen when their friend had the turn to present in front of the class.

And I could see that not everybody in the group was working. If I asked them to summarize certain paragraphs, there were only one or two students were writing and discussing, the rest were busy talking about other things...So I am confused what I should do with the class. Until now I have made the group smaller, sometimes for one unit of passage I made it smaller into 3 people. If there were three people, whether they liked it or not they had to work. It is not like some work and some not... so they had to help each other.(Lecturer 8)

Not only were students ignorant in the English class, but they also said that the English course did not give much help to them. Although students and faculty indicated

that students could learn general English outside the campus, statistics showed only 44 students (10%) out of 470 students attended a private course in English. A limited number of English assignments given by the teacher and a great amount of Indonesian handouts have also been the reasons of students' low motivation level.

Students' lack of motivation can also be seen from the fact that they borrowed or copied exercises answers provided by their seniors since they also used the same book for the English course. English instructors learnt about it and that was one of the reasons of adding supplementary materials.

So that they students would not feel bored. Since for this book, for those who borrowed, the exercises/answers were already provided. They did not work by themselves, they thought the answers were provided. If I asked them to do the exercise in class (write on the blackboard) they just copied the answers. So the supplementary could be in the form of reading comprehension exercise, so that the students did not need to do the ones in the book cause the questions were from me...or it could be in the form of vocabulary... (Lecturer 8)

5.1.3 Types of Skill Needs

5.1.3.1 Students' Reading Skill Needs

Students, engineering lecturers and English instructors seem to have different views on students' reading needs. Teachers perceived students' reading skill to be quite inadequate. Only a civil engineering lecturer felt that their reading skill was generally acceptable. Students revealed that the reading problems encountered most often were in the area of speed reading, skimming and scanning. In contrast, engineering lecturers believed vocabulary, grammar and comprehension were the area of weaknesses of the

students. There is a difference in views between teachers and students in terms of paraphrasing skill. Even though students perceived comprehension and paraphrasing as their reading strengths, English instructors felt that paraphrasing skill, grammar and vocabulary were difficult for the students.

The students' reading problems described earlier are most probably due not only to linguistic discrepancies, but also social and cultural influences normally experienced by second or foreign language learners. Second or foreign language readers usually have weaker linguistic skills and a more limited vocabulary than do first language readers (Grabe and Stoller, 2001). These readers lack an intuitive foundation in second language structures and cultural knowledge in the texts. Second language readers, therefore, need guidance in finding out ways in which texts are organized and information is presented. The textual knowledge is important to lead readers to comprehension. Working with at least two languages, second or foreign language readers are either able to rely on their first language knowledge and reading abilities or at the risk of first language knowledge interference.

Learners' social and cultural backgrounds also contribute to different motivation levels. Some second language learners come from families who read very little, have few reading materials available, and do not encourage independent reading. Others come from a very different family background in which reading is encouraged.

In the EFL contexts, goals for language instruction vary, levels of English proficiency differ, and expected reading outcomes are likely to be different. The differences can play

prominent roles in setting goals for reading instruction and specifying the levels of reading ability that constitute successful language learning.

In the context of Petra Christian University, the lack of reading assignments in English, lectures in the first language and the availability of Indonesian version of the textbooks can lower student's motivation to read. Teachers would prefer students to read the English version of the textbooks, but they cannot guarantee that students would not depend on the translation version.

One example of students' common mistakes in reading skills according to English instructors was regarding English grammatical structure. Instructors seemed to focus on form than meaning; however, they sometimes would negotiate if students made grammatical mistakes but their sentences were still able to convey the correct meaning:

Sometimes I can understand if they make grammatical mistakes, but not for instance changing active into passive or vise-versa, since it can change the meaning. That's my principle. I have told them, if they do not put the ending s, then, no s for plural, it is ok with me. The question is in present but the answer is in past tense, it is still ok. But if they change active sentence into passive without changing the subject, then it is wrong since it can change the meaning. But if they quote the answers from the reading in the wrong ways, for instance I give them 10 questions and they divide the text into ten parts and directly copy the answers from the text. Sometimes they do not know where to start and where to end, so they pick up the wrong/ unnecessary part of the text. For that case, I will reduce the mark. (Lecturer 7)

Another English instructor also said that there was a negotiation on form in assessing the students.

They did not care whether the tenses is relevant or not...they did not care...so, sometimes the passage used past tense, the question was in the present tense, they answered using the past tense, they just quoted. Since the focus/ emphasis was not on grammar, so

whether we liked it or not we considered the answer was right while actually it was wrong. (Lecturer 8)

In the context of engineering, as indicated by an engineering lecturer, mastering complex grammatical structure was not a crucial demand for students, since applications such as calculations, exercises, illustrations, graphs and figures could help students to comprehend the text better. This opinion is supported by a study conducted by Ward (2001), who found that engineering students in Thailand had similar tasks, which was to read English textbooks and to attend L1 lectures. Students compensated their poor reading skills by focusing on applications.

5.1.3.2 Students' Vocabulary Skill Needs

In addition to reading engineering textbooks, acquiring engineering terminology is also a part of students' immediate needs. Results from a study by Hiu, Johnson and Olive (1999) on perceptions of English needs in a medical context in Taiwan revealed that students needed to acquire medical terminology in English. As was observed in some engineering courses, even lectures were conducted in the first language, teachers had to switch to English to introduce engineering lexical items. The findings from textual analysis corroborate the fact that even though handouts were in Bahasa Indonesia, teachers did not provide Indonesian translation for engineering terminology. In terms of vocabulary, current English course does not support the students' needs since they are in general context.

Despite the necessity for students to acquire engineering terms, students seem to encounter limited vocabulary problems. As stated by students in the survey, vocabulary seemed to be the most dominant problem for the students. This finding is supported by an English instructor's comments in the interview that vocabulary and sentence patterns were problematic to the students.

The problems students encounter from the recent materials are the vocabulary and then the sentence patterns. When it comes to complex sentences they started to get lost, which one is the subject and which one is the verb. That's what makes it difficult for them to understand the content of the readings. And when I asked them to read, and find certain ideas, they might know certain part in the paragraph, but they somehow get confused where is the beginning and where to end. If they pick up the right part but then end up with the wrong one or vise versa, then it may have somehow different meanings. (Lecturer 7)

However, further study needs to be conducted to investigate whether the kind of vocabulary problem that students encounter is technical or high frequency words. A study on Indonesian university students' vocabulary skills (Nurweni & Read, 1999) indicated that students' general vocabulary level was very low. The study attempted to estimate the English language vocabulary knowledge of first year students at an Indonesian university. The findings showed that students acquired half of the two thousand most frequent words in English. The amount of additional English vocabulary that they were familiar with was unlikely to have been substantial. The limited vocabulary knowledge revealed that in their studies at tertiary level, Indonesian students were expected to be able to read English texts related to their major subjects. The study showed that upon entry to the university, they had not reached the threshold level of 4,000-5,000 words that was widely

regarded by scholars as the minimum vocabulary knowledge required to be able to read academic texts. This means that most of these students were still likely to find academic texts frustrating to read even after they had taken the English course for two or more semesters in the university. The students would come across a significant number of unfamiliar words in such texts, and so their reading speed as well as their comprehension would be inhibited. This raises questions of what could be done to address the students' lack of vocabulary knowledge. Teachers of English at the university need to pay more attention to vocabulary. One approach is direct teaching of high–frequency words. Given that students have little access to resources for acquiring English outside the classroom, direct teaching of these words is an efficient way to expand their vocabulary knowledge and thus to achieve better coverage of the running words in academic texts.

Acquiring terminology is the most challenging aspect that students face in learning English language. The vocabulary appropriate for students following EAP courses should clearly be more advanced than the core 2,000-3,000 words that provide the basis about 80% of the words likely to be encountered. Technical words or specialist vocabulary are usually considered to be the responsibility of the subject teachers: the words are closely connected with learning the subject and may present conceptual difficulties. Explicit vocabulary instruction is needed to empower students' vocabulary skill. A promising experiment in ESP was unfolded at Sultan Qaboos University in Oman (Cobb & Horst, 2001) where the approach was to integrate English Language and content instruction. When classes started, English language instructors taught first-year students in classic

ESP instruction, attended and followed up physics lectures, prepared students for the language of their chemistry experiments, and attended biology laboratories to help cut up frogs and write up results. Advanced courses were developed for engineering and medicine. ESP was very successful in Oman. However, students' English proficiency when they first entered the university was lower than the course designers expected. The question raised was whether it was possible to offer ESP to the students at the very beginning, without exposing them to general English earlier. The Omani students' main weakness was in reading English texts. The scientific texts used to be shortened and simplified to help students comprehend them. Professors reported that they had to spend an enormous amount of time to explain technical vocabulary to the students. However, research evidence also showed that students' main vocabulary problems were not only at the technical level. English scientific terms were often already known in the first language, as concepts awaiting new labels or even loan words. If unknown, they were often inferable from diagrams, glossed and emphasized in lectures, and had stable meanings from one context to another. None of this was true of the high frequency words that scaffolded the technical terms.

5.1.3.3 Students' Speaking Skill Needs

Students perceived speaking skill as the most important skill to improve. One reason is that they are aware that future occupational challenges require them to be fluent in oral English. That is one factor that motivates students to enhance their English speaking skill.

Even though students do not have the chance and necessity to speak English both in their daily lives and in their academic lives, they want to learn how to speak English. It is their subjective needs. Lack of opportunities and exposure for practicing their oral skill trigger student's awareness to empower their speaking skill.

An English speaking atmosphere has failed to develop in the English courses. English instructors revealed that time limitation and a large class size hindered the possibility for an effective classroom discussion. Students tended to use first language in classroom discussions. English teachers negotiated this phenomenon since they perceived students' speaking skill as very low. These findings echo what researchers perceive to be the biggest challenges in EFL speaking class (Larazaton, 2001); students lack motivation to speak, the use of first language is still dominant, and the English curriculum emphasizes other skills such as reading and grammar.

5.1.3.4 Students' Writing Skill Needs

Both teachers and students are in agreement that writing was the least important skill to improve. Engineering lecturers felt that students were facing difficulties in completing writing tasks in English. The faculty viewed reading to be the most crucial skill to improve while writing skill was the least important. However, they may not realize that there is actually a close correlation between reading skill and writing skill. Students are supposed to read references in English and to access the students' understanding and teachers normally assign students to write a summary of the text. To be able to

summarize and paraphrase the assigned texts, summary and paraphrasing skill are needed. An adequate writing skill will definitely support students to meet the reading skill demand.

Identification and classification of writing assignments of undergraduate courses in the Natural Sciences and Engineering at the University of Texas at Austin (Braine, 1995) support the idea that engineering students need to be skillful in summary and paraphrasing. The study found that description and narration were the dominant modes of discourse within experimental reports and paraphrase and summary activities were vital in the reports writing. Therefore, individualizing assignments and emphasizing paraphrase and summary activities were important in forming composition classes for ESL/EFL students majoring in the natural sciences and engineering.

5.1.4 The Needs of Subject Area Knowledge

The three parties - students, engineering lecturers and English instructors - hold the same opinion that materials for English should be related to engineering topics. It means that English teachers should be familiar with at least engineering terminology to be able to interact effectively with the students in engineering classes. As was pointed out by a civil engineering lecturer:

That is just to motivate the students since civil engineering students sometimes are too reluctant to study English, frankly speaking. They would say it has nothing to do with their major, whereas actually it is relevant, at least in the area of grammar. Grammar is necessary. For engineering specific terminology, students can learn along the way, especially when they are taking the course requiring them to get familiar with the

vocabulary. So if they learn all technical words at the beginning in the English course, away before they take the course, then it is difficult, even for the teacher. Why? Because those who are teaching the terms must have civil engineering background, whereas if they are asked to teach English, I don't think it works!

A study conducted in Bogor and Bandung, Indonesia (Bell, 1996) aimed to explore the importance of subject content knowledge for EAP teachers to better train university students. Because EAP teachers have been assumed to be responsible only for students' language skill, subject content knowledge was not necessary for them. Further, English teachers often are not familiar with the complexities of terminology and ambiguities of learners' subject areas.

EAP teachers need to guide students on identifying key word and concepts, verbs and adjectives that carrying the central message in scientific discourse. Knowledge of recognizing key terms is crucial in reading scientific discourse. Therefore, an in-depth study of the subject matter is required to interact effectively with the learners. This idea echoes the findings indicated in this present research, in which students and teachers agreed that English instructors should be familiar with students' subject area, engineering. It appears that EAP teachers will not be able to provide an effective instruction to a group of learners with a different academic background. Bell's study suggested that teachers having no background on students' subject area need to devote more time for preparation.

5.2 The English Language Course for Engineering Students

In order to contextualize the proposed English course for engineering students, the following section will describe the nine characteristics of a Compulsory Undergraduate English (CUE) courses in Indonesia (Coleman, 1997; Soedradjat, 1997). Instead of being used as a medium of instruction, English is a compulsory subject for university undergraduate students (non- English majors) in Indonesia. Information about the current English course offered for all non- English majors at Petra Christian University will also be presented. The data was drawn from surveys and interview with an English course coordinator and three English instructors.

5.2.1 Widespread Existence

Compulsory undergraduate English is widespread and has been in existence for a long time. Higher education institution in Indonesia requires undergraduates to take the required, credit bearing English course.

5.2.2 Large Classes

An English class usually contains 60-90 students. Limiting class size to a smaller number of students is problematic since there are not enough classrooms available. CUE is extremely heterogeneous, both inter-institutionally and even intra-institutionally. Different institutions offer, organize, and administer the English course in various ways. At Petra Christian University, an English class consists of 50-70 students. The groupings

of the students are not based on students' sub-disciplines. Students from various engineering sub-disciplines may be grouped together in one class.

5.2.3 Time Allocation

The compulsory English course would normally be given to the first-year students. Time allocated is usually one 100-minute session per week. Petra Christian University provides the English course only for one semester. Students attend the class for two hours per week.

5.2.4 Management

In some universities, a department organizes the English course, but in other institutions, they assign individual teachers to be responsible for the English teaching and learning process. The responsibility can range from designing the syllabus to the evaluation of the course. The drawback from this management is heavy teaching loads for teachers and minimum coordination among teachers. At Petra Christian University, the English course is administered by the Department of Foundation Courses. This department handles both compulsory and elective foundation courses to be taken by all undergraduate students in the university. Based on the university prospectus, the goals of the department includes

- Channeling and reflecting the religious mission of the Petra as a Christian University.

- Expanding students' concern and understanding of social problems in preparation for decision making later in life; developing an appreciation for the social sciences, law, economics, religion, ethics and national security.

The Department of Foundation Courses administers both required and elective courses. Examples of compulsory foundation courses included in this department are ethics, the Christian religion, civics, the State Ideology, Foundation of Natural Science, Foundation of Social Science, and Foundation of Cultural Science. Other courses such as Methods of Objective Thinking and Christian Leadership are offered as elective courses. English, having 2 credit hours for one semester, is also an elective course for the non-English departments at Petra Christian University, namely the Faculty of Engineering, the Faculty of Economics and the Faculty of Art and Design.

5.2.5 Teacher Factors

The majority of the staff responsible for CUE are trained in English language and linguistic settings, rather than the academic field for which the specialized EAP course is designed.

All English instructors at Petra are local Indonesian teachers. They all have bachelor degree qualifications with 12 up to 15 year teaching experience. All are female and are between the age of 40-50. None of the English language instructors at PCU have training in ESP.

5.2.6 Learner Factors

Students are placed in CUE courses based on administrative purposes rather than on their language competence. The English class will be composed of students from the same academic discipline; they will not be streamed according to their English proficiency. In other words, in CUE classes there is an assumed homogeneity of competence, which may, in fact, be unjustified.

CUE is a required course for first year undergraduate students in most universities in Indonesia. However, at Petra Christian University, since English course for non-English majors is an elective one, students from any year of study (not necessarily first year) can take the course. As mentioned earlier, engineering students from various engineering sub-disciplines may sit together in one English class. Students are primarily Indonesians, mostly between 19-24 years old. They have been learning English for at least 10 years. As described by the English instructors, students are not highly motivated to learn English. Their English level is intermediate.

5.2.7 Material Development

The published English teaching materials on the market are mostly targeted to other countries, not specifically to the Indonesian context. The materials are culturally different from those of Indonesia, and are usually compiled and adjusted to suit the local context. The English course material used at Petra Christian University *"Building Bridges: English for Academic Purposes"* (Lie & Limuil, 2001) is in-house developed, designed

by the course-coordinator and a course designer. The needs analysis conducted by Lie and Limuil (1998) showed that before the current material was developed, teachers viewed the previous materials to be outdated and uninteresting. The research also found that students' future occupations demanded them to be proficient in English. Besides those factors, the groupings of engineering students from different sub-disciplines into one class also triggered the development of the current material.

The material is aimed at students who need to improve their English for academic purposes. More specifically, the material is relevant for learners who study in various disciplines at the college level. It is assumed that those students have had several years of instruction and exposure to English but are not fully comfortable using English for communication. The material is intended to enable students to:

- engage in real talk in the classroom and use English correctly and purposefully
- read and discuss topics relevant to their fields and real life
- write about various subjects related to the students' interests and needs

The material contains 10 chapters, integrating all English language skill: listening, speaking, reading, and writing. Table 5.1 is the list of topics and language skills or function found in *Building Bridges*.

Table 5.1 Chapter Topics, Language Skills and Functions

Chapter	Topics	Language Skills/Function
1	Song of Myself	Talking about Oneself
2	Sky High	Talking about Others
3	What a Wonderful Place	Describing a Place
4	It's a Small World	Future Possibilities
5	Keep in Touch	Expression of Frequency
6	Free Trade	Nouns, Verbs, Adjectives
7	A Bug's Life	Opinions and Arguments
8	Whistle While You Work	Job Application
9	Following the Leader	Passive sentences
10	Wish Upon A Star	Suggestions and Recommendations

Table 5.2 presents features listed in each chapter.

Table 5.2 Features of Each Chapter

Features	Descriptions
Language focus	A glossary and exercises designed to present and give practice in the language structures used in the chapter
Let's talk about it	Activities to facilitate the students to use English in a real context
Reading	Contains pre-reading section to activate the students' schemata and the reading section to present interesting and relevant topics
Let's write	Presents a follow-up of the previous parts; encourages the students to write for a purpose
Project	Extra activities to encourage a creative but well-guided use of the English language; teachers are encouraged to select the material according to topic or language skill and function. At the beginning of each chapter, objectives and tasks are introduced.

The objectives and features of the book show that the English course's aim is not merely to expand the students' reading skill. Instead, it attempts to enhance students' communicative skill in general. A more integrated skill–based has been applied in the material.

5.2.8 Teaching Methodology

Teachers reported that they used the English course material chapter by chapter and put efforts to finish the whole book by the end of the term. Some provided additional material to the students when necessary. Though the course text is integrated (reading-listening-speaking-writing) in nature, teachers seem to apply the grammar translation method in the English classroom. The most common classroom activity is eliciting comprehension answers from the students and providing feedback. A more interactive and communicative method such as group discussion, peer review, or oral presentation are not incorporated in the classroom. Teachers believed that time limitation and large classes (60-70 students in one class) are the source of problems.

5.2.9 CUE Lacks Prestige

Holliday (1997) and Coleman (1997) mentioned that the CUE in Indonesia lacks prestige. CUE is noticeably not the sort of English language teaching that well established lecturers are keen to become heavily involved in. It is seen to be relatively difficult and less rewarding. The low status of ESP is not uncommon in many parts of the

world. It is not always taken seriously by the subject lecturers. This is helped by the fact that ESP teachers are often junior staff and are not employed as part of the faculty structure.

At Petra Christian University, English instructors are all part time staff and they do not belong to any of the university's faculty structure. The status change, from a compulsory course to become an elective one, also shows that the English course for non-English majors at Petra Christian University has low prestige.

5.2.10 Syllabus Specification

English instructors seem to lack information regarding the syllabus specification of the English course. When asked how the demand of the course was identified, whether there was an attempt to analyze needs and how course objectives were identified, all English instructors revealed that they did not know the answers. Only the course coordinator said that there was an attempt to investigate students' needs and the course demand was established based on the research. Surveys of students and prospective employers and focus group discussions of subject teachers and English instructors were carried out to collect input.

5.3 The Engineering Faculty and the English Course Mismatches

There has been a mismatch between the academic requirements of the Faculties of Engineering and the English course being offered to meet these requirements. The most

significant gap is the lack of focus on enhancing students' English skills for their academic Engineering Studies as the course was primarily focused on General English purposes.

The course coordinator stated that the aim of the course is to better prepare students for professional communication; however, it is mentioned in the course material objectives that the book can enhance students' academic English skills. Sub-disciplinary specific topics and vocabulary are not much included in the materials.

Building Bridges: English for Academic Purposes, the recent English course material, aims to enhance students' communication skill, such as being proficient in oral English skill and being able to engage in a real life communication. However, time and large class challenges hinder the implementation of effective speaking and writing practices, involving interactive group discussions. The English course has given reading practice to the students, which is the most needed by the students for their academic success. However, the effectiveness of the teaching of reading is still in question. Teachers have not appeared to implement a creative and motivating teaching methods in class. Students are not enthusiastic enough about they have learnt in the course.

More innovative teaching methods like those applied in the Hong Kong context (Bhatia & Candlin, 2001), for example, may be needed to facilitate a more communicative and interactive classroom atmosphere. Business faculties in Hong Kong nowadays increasingly use teaching methods where students are expected to relate their theoretical knowledge to the real world of business through such means as case studies.

English language providers are, to some extent, meeting Business Faculty communication requirements, by, for example, using cases and simulations and encouraging the use of presentations, proposal writing, report writing, and research skills.

At Petra Christian University, the limited time and credit offered by the Department of Foundation Courses make the challenges of English teaching and learning for engineering students even greater. In the past, at PCU, the English course was handled by the Department of Foundation courses, but the materials were discipline specific. For instance, materials for civil engineering students would be different from those of architecture engineering students. Under a new rector, there was a change of policy. Courses offered by the Department of Foundation courses would be general and should be taken by all students from different majors. Since English was one of the foundation courses to be taken by the students, it is supposed to be generalized for students from different departments and intended to be EAP instead of ESP.

The English course used to be a compulsory course. It has been changed to an elective since there was a foundation course added for the required course components. The maximum credit hours for foundation courses taken by the students was 16. The number of credit hours taken by students for foundation courses could not exceed 16. Since there were additional required courses to be taken by the students, English was changed into elective course.

In the context of English language teaching in the university, a study by Yusuf and Sewoyo (1997), revealed that it was not appropriate for English to be included in the

department of Foundation Courses, since the purpose of teaching English was not to develop the students' personality or to change their attitudes (which were the aims of the other subjects administered by the department).

Holliday (1997) stated that only a very limited number of studies have been conducted in this area, and very few conference papers presented in this topic. English course has been made a compulsory course for undergraduate students in Indonesia. The low status of ESP is not uncommon in many parts of the world. It is not taken seriously by the subject lecturers. This situation is worsened by the fact that ESP teachers are often junior staff and are not tenured as faculty members. To be able to accommodate the students' as well as the teacher's needs, integrated approach to language teaching is needed.

5.4. Conclusion

This chapter has discussed the current English needs of engineering students at Petra Christian University, the effectiveness of the English course for engineering students and the mismatches between the engineering faculties demands and what has been instructed in the English course. Students' current English immediate needs were reading engineering textbooks in English and understanding engineering terminology. Other English skills' needs such as speaking, listening and writing were delayed until the final year of the engineering studies. There has been a different perception between students and teachers in terms of the needs. Students' objective needs were reading and vocabulary skill while their subjective needs were speaking and listening skill.

Regarding the English course for engineering students, though materials were designed to meet the students' academic needs, the effectiveness of English instruction in class was still in question due to a number of factors, such as time constraints, large classes, and management factor. The gap between students' English language needs for their engineering studies and what they have been taught in the English class has lowered students' motivations to learn English.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

This chapter begins with a brief summary of the research findings presented in Chapter Five. Recommendations for the improvement of the English curriculum at Petra Christian University and limitations of the present study are also presented. Finally, the chapter ends with suggestions for future research.

6.1 Summary of the research findings

To facilitate a deeper understanding of the engineering students' current English language needs, both quantitative and qualitative data were collected and then triangulated to compare the perceptions of the different stakeholders. Questionnaires were directed to 470 engineering students, six engineering lecturers and four English instructors. To gather additional information on some of the areas covered in the surveys semi-structured interviews were also carried out with a representative sampling of first year engineering students, six engineering lecturers and four English instructors. In addition, thirteen engineering classes and an English course for non-English majors at Petra Christian University were observed to find out how English was actually used in those classes and to see whether there were any discrepancies between what the English language demands placed on students and what they have been taught. To supplement the above data and to give recommendations to the English support course for engineering

students, the researcher also collected and analyzed syllabuses, textbooks, and lecture handouts used in the engineering classes and the English course. Thus, the collection of data from multiple sources permitted a much richer, clearer picture of the actual language needs of the engineering students in the present study.

The English needs of the engineering students at Petra Christian University are found to be delayed until the later stage of students' academic lives, such as during the collection of references to complete their final projects. In fact, the English language demands of future occupations have become the main concern of both students and teachers. From the students' point of view, immediate needs, such as reading textbooks in English and understanding English engineering terminology, are less dominant. Lack of English reading assignments, a great dependency on L1 lecture handouts and being able to achieve academic success without a high English proficiency have lowered students' motivation to improve their English language.

Although the students are more concerned with delayed needs, both engineering teachers and English instructors are more concerned with the students' immediate needs. There is also a disparity in terms of perceived English language skills. While the students consider speaking and listening to be the most needed (delayed) skills, teachers consider reading, grammar, and vocabulary to be the most needed (immediate) skills. The current English course materials, which have been prepared to meet the future occupational needs, are not accompanied by an effective and interactive teaching and learning process in the classroom. The overall English course does not aimed to directly prepare students

academically. It is a general English course; there is no sub-disciplinary specific topics or vocabulary included in the material.

The absence of direct connection between the English course and engineering students' academic demand results in a gap between what students need and what they have been taught.

6.2 Limitations of the study

In any research study, the amount of data collected cannot be controlled or guaranteed because it relies on the availability and willingness of the participants to cooperate. The present research too has limitations. Although 470 students were successfully surveyed, only five students were available to be interviewed. Further, only six engineering teachers and three English instructors were surveyed and interviewed. The somewhat limited sample is due to a number of factors. For instance, the data collection process took place two weeks before the final examination period, so the number of students willing to take time-off from exam preparation to be interviewed was limited. Similar constraints imposed limitations on the sample of engineering teachers. Because the data collection process took place almost at the end of the semester, lecturers could spare little time to be interviewed by the researcher because they were burdened by marking papers. Because the interviews were carried out as soon as lecturers completed the surveys, there was no time available for the researcher to review the survey data and conduct in-depth interviews based on the responses to the questionnaires. Since it was not possible to gain

information from a larger sample of engineering teachers, generalizations on different engineering sub-discipline are difficult to arrive at. These limitations can lead to a difficulty in getting a fuller picture of the academic demands of the different sub-disciplines.

6.3 Recommendations for the English Curriculum

As stated in Chapter 1 and 3, the last objective of the present research is to make recommendations for the improvement of the English curriculum at Petra Christian University. Although in some cases teachers and students show different viewpoints about the current engineering students' needs, the English support course offered for engineering students should be able to take into account objective information derived from the teachers as well as subjective psychological needs felt by the learners. Hence, negotiations between the two parties to reconcile the two different kinds of needs are very important. Information on roles and expectations from teachers and learners have to be exchanged and compromises have to be reached between what learners expect and what teachers can provide. In this section, recommendations are made to the English instructors and the engineering lecturers on the objectives, material development and management of the English course for engineering majors. Lastly, recommendations are addressed to the university.

6.3.1 To the English Instructors and Engineering Teachers

Communication between English instructors and engineering lecturers is important for the better understanding of the engineering students' English needs. English instructors should be familiar with students' subject area, in this case engineering terminology at the least.

To be able to engage with the disciplines, more cooperation between English instructors and subject specialists is essential (Dudley-Evans and St. John, 1998). English instructors should take a proactive role in asking questions and gathering information about students' engineering courses. The aim is to find out how the English curriculum fits into the engineering courses and what the department and students see as priorities. English instructors and engineering teachers should integrate and collaborate to prepare students for particular tasks or courses. For instance, engineering teachers could select English material which runs parallel with those in the engineering courses. To enhance students' motivation, students would be rewarded in the subject examinations (written in the first language) for any points or examples taken from the English reading materials. The integration of subject matter and English language can also be achieved through team teaching some engineering courses, by English instructors and engineering teachers. English instructors could also assign more reading assignments to the students to better prepare them to read engineering texts.

6.3.2 Objectives of the English Support Course for Engineering Students

Not only do students need English to perform well in their academic lives, but also to face future career challenges. Therefore, the ideal English course for engineering students should be able to fulfill both academic and occupational needs.

Hence, to be able to meet the academic needs, English for General Academic Purposes (EGAP) as well as English for Academic Purposes (EAP) are suggested. EGAP refers to the teaching of the skills and language that are common to all disciplines. It is prudent to design an EGAP course with a focus on reading skill for first year students to empower them in coping with their academic studies, especially the reading of engineering textbooks in English.

In order to meet the students' academic needs, more explicit instruction in reading skills would be effective. To tackle the reading skill problems faced by students who must read reference texts in English but perform related tasks in their first language, EAP course coordinators could design their own courses and materials. A syllabus which incorporates explicit instruction on discrete linguistic forms, reading comprehension strategies, academic genres, as well as criterion tasks which focus on meaning and which can reflect real-life academic tasks would be more effective (Cohen, Kirschner & Wexler, 2001). In order to motivate students and improve their reading comprehension as well as their knowledge of grammar, the use of well-selected, relevant, authentic reading materials that are is recommended (Porcaro, 2000).

Therefore, by the end of the first year, engineering students should be able enhance their English reading skills such as

- speed reading,
- skimming and scanning,
- understanding and analyzing non-textual data (graphs, diagrams, etc.),
- note-taking; arranging notes in hierarchy of importance, and
- summarizing and paraphrasing.

The English course for engineering students should be able to meet students' objective as well as subjective needs. Students expressed that they needed to improve their productive skills, therefore; more speaking and listening skills should be incorporated in the English class. Instructors should be able to motivate the students by providing a motivated and authentic speaking and listening materials to students.

During the second year of the study, EAP courses can be offered to the students. The course could introduce features that distinguish one discipline from others. As students are more specialized in their majors, subject specific English is needed. It includes the language structure, vocabulary, particular skills needed for the subject, and the appropriate academic conventions.

An integrated approach to language teaching would appear to be beneficial, for example, reading and writing skills (students are usually assigned to summarize what they have read). Specific terminology from the subject matter can be incorporated in the language materials. Theme-based or content based instruction seem to be appropriate in

this case since students can relate the topics of their subject area with classroom tasks that can represent real life situations.

Since students encountered significant vocabulary problem, focus on vocabulary instruction would be directly helpful for the students. The students should acquire both technical and sub-technical words. Technical words or specialist vocabulary are usually the engineering teachers' responsibility. The words are significant for the understanding of the subject area and occur frequently in the texts. Therefore, language instructors need to prepare learners to deal with them. Sub-technical vocabulary, which are high frequency and context independent words, have proven to be essential for university students from various disciplines (Jordan, 1997).

Another important component of the English course for engineering students is to introduce students to the English used for future occupational demands. This English course can be offered to students during their final year.

6.3.3 Material Development

Materials should be authentic, and creative to increase the students' motivation. They could be designed by the English instructors in consultation with engineering lecturers. From a pedagogical point of view, the textual analysis findings have the potential to refine the materials for the English course for engineering students. In particular, they helped to identify the actual linguistic demands placed on students as well as the particular writing format and language forms needed by engineering students (e.g.,

specific vocabulary, sentence or grammatical structures). The analysis of the lecture handouts revealed that since technical vocabulary was the primary need of engineering students, explicit technical engineering vocabulary should be incorporated into the material design for the English support course. Since the ability to read and interpret graphs, figures and applications is heavily needed in this discipline, more practice to develop these skills should be emphasized in the English language support course rather than exercises that are intended to help the students improve their comprehension of lengthy texts.

6.3.4 Time Allocation

More time should be devoted for English teaching and learning to give students more opportunity to be exposed to English. An English support course that can better meet the engineering students' needs should be given in more than one semester.

6.3.5 Management of the English Course

Since more time should be devoted to English language teaching and learning in the university, administration and management of the English course should not be handled by the Department of Foundation Courses. A separate English Language Teaching Unit with full time staff will be able to provide a more effective service to enhance students' English proficiency.

6.3.6 To the University

Petra Christian University has a long term plan to implement English as a medium of instruction in the campus. This goal is actually stated in the university strategic plan (RENSTRA). This study describes the present situation in terms of the university English curriculum. Not only do students need to improve their English skills, but also teachers as well. Most teachers appear to lack confidence in their English proficiency. Therefore, an English language enhancement program for engineering teachers need to be implemented. Since the scope of the present study is not on the teachers' English need, another English language needs analysis of engineering teachers may be needed.

6.4. Conclusion

This final chapter has summarized the findings of the investigation of English language needs of engineering students at Petra Christian University. Limitations of the study were also presented. A curriculum of an English support course that can show better reflections of engineering students' needs were recommended.

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APPENDIX A

APPENDIX A.1 Engineering Students Questionnaire

ENGLISH LANGUAGE NEEDS ANALYSIS FOR THE FACULTY OF ENGINEERING PETRA CHRISTIAN UNIVERSITY SURABAYA INDONESIA
Questionnaire for Engineering Students

Instructions

- The aim of this questionnaire is to obtain information about how English is used by engineering students. The information gathered from this questionnaire will be helpful to better understand your English language needs.
- The questionnaire is divided into three parts: demographics, perceptions on English needs in engineering classes and views on the English language course for the first year students.
- Please check the appropriate answer for the multiple choice questions and fill in the spaces for the open ended questions

Part 1: Demographics

1. Which department are you studying at ?
   a. Civil engineering
   b. Architecture
   c. Electrical engineering
   d. Mechanical engineering
   e. Industrial management
   f. Computer science

2. What year are you in?
   a.1 b.2 c.3 d.4

3. What was your English grade for DANEM (the public examination)?
   a. 100-80 b.80-60 c.60- 40 d. Below 40

4. Sex:
   a. Male b. Female

5. Age
   a.20 or under b.21-24 c.25 or above

6. Did you attend secondary school in Surabaya?
   a. Yes b. No
   If not, where did you attend your secondary school? _____

7. How long have you been learning English? _____ years

8. Do you attend private English courses outside the university?
   a. Yes b. No

9. If yes, please indicate the institution: _____

10. If yes, what is your purpose in attending these courses?
    a. To improve your reading skills in academic English.
    b. To improve your academic listening, speaking and writing skills in English
    c. To prepare yourself to meet the English language demands of your future workplace.
    d. To improve your general English skills (such as conversation skills, listening, writing).
    e. For other reasons. Please specify_____

Part 2: Perceptions on English Needs in Engineering Classes

11. How important do you think English language is to your current engineering studies?
    a. Very important b. Important c. Somewhat important d. Unimportant

12. What percentage of the reading assignments in your engineering courses is in English?
    a. 0-25% b. 26-50% c. 51-75% d. 76-100%

13. Which of the following English language skills do you feel are the most important to improve
    a. Listening b. Speaking c. Reading d. Writing

14. From the list below, select two areas which you feel are your particular strengths in reading.

    a. Reading comprehension
    b. Reading speed
    c. Skimming and scanning
    d. Understanding and analyzing data (graphs, diagrams, etc)
    e. Note-making
    f. Summarizing and paraphrasing
    g. Outlining

15. From the list below, select two areas that you feel are your particular weaknesses in reading.

    a. Reading comprehension
    b. Reading speed
    c. Skimming and scanning
    d. Understanding and analyzing data (graphs, diagrams, etc)
    e. Note-making
    f. Summarizing and paraphrasing
    g. Outlining

16. From the list above (no.4 and no.5), which areas do you need to improve the most?

    Most important area: _____
    Second most important area: _____

Third most important area: _____

17.How difficult to read are the following types of writing?
Please tick the number that corresponds to the degree of difficulty.
5= very difficult 3= neither difficult nor easy 1= very easy
4= difficult 2= easy

Engineering course textbooks	1	2	3	4	5
Lecture outline notes/ handouts	1	2	3	4	5
Reading assignment	1	2	3	4	5
Internet/ web page texts	1	2	3	4	5
Reference books	1	2	3	4	5
Background information books	1	2	3	4	5
Engineering articles	1	2	3	4	5
Supplementary readings in engineering	1	2	3	4	5
Newspaper articles	1	2	3	4	5
Journals/ periodicals articles in engineering	1	2	3	4	5
Literature reviews	1	2	3	4	5
Software instructions	1	2	3	4	5
E-mail messages	1	2	3	4	5

18. What English problems are you currently facing in your academic studies?
(You may check whatever is appropriate.)

a. Limited vocabulary
b. Poor grammar
c. Poor listening comprehension
d. Poor speaking skill
e. Slow reading speed
f. Poor writing skill
g. Poor reading comprehension
h. Poor understanding of charts graphs (graphic organizers)
i. Poor understanding of cultural context
j. Other (specify)_____

19. Which of the following tasks are you required to do in English in your engineering courses?
(You may check whatever is appropriate.)

a. Reading engineering textbooks and journal articles
b. Presenting oral reports
c. Understanding English engineering terms in class lectures
d. Make notes of reading passages
e. Discussions
f. Doing tests
g. Writing research papers

h. Writing lab reports
i. Other (specify)_____

20. Do you prefer your readings to be in...
a. Bahasa Indonesia b. English

21. If you prefer "in English" for question 20, can you identify the advantages of doing the readings in English?

_____

Part 3: Students' Views of the English Course

22. Should the materials in the English course be relevant to engineering?
a. Yes b. no

23. What percentage of English materials in the English course should be related to engineering?
a. 0-25% b. 26-50% c. 51-75% d. 76-100%

24. Do you think there should be a required general English course for first – year students (not an English for Engineering Purposes course) ?
a. Yes b. No

25. Do you think there should be a more specific English for engineering purposes (e.g. English for Civil Engineering) courses ?
a. Yes b. No

26. If yes, in what years do you think there should be a more specific English for Engineering Purposes (e.g. English for Civil Engineering) courses ?
a. First b. Second c. Third d. Fourth

27. How do you think the specific English for engineering purposes should be offered ?
a. As a required course b. As an elective course

28. Do you think the English course is useful to your engineering studies?
a. Yes b. No

29. If you answered "yes" for question 28, in what ways?

_____

30. If you answered "no" for question 28, please indicate your reasons

_____

31. Have your English skills improved as a result of attending the English course ?
a. Yes b. No

32. If you answered "yes" for question 31, which particular skill (s) has / have improved?
a. Grammar b. Reading c. Listening d. Speaking e. Writing

33. What would you like to improve about your English?

_____

34. What recommendations would you like to make for the English course ?

_____

35. What should be maintained from the English course?

_____

36. If the university open an English course for second year engineering students, what should the course focus on (area of specialization)?

_____

APPENDIX A.2 Engineering Lecturers Questionnaire

ENGLISH LANGUAGE NEEDS ANALYSIS FOR THE FACULTY OF ENGINEERING PETRA CHRISTIAN UNIVERSITY SURABAYA INDONESIA
Questionnaire for Engineering Lecturers

Instructions

- The aim of this questionnaire is to obtain information about how English is used by engineering students. The information gathered from this questionnaire will be helpful to better understand the students' English language needs.
- The questionnaire is divided into three parts: demographics, perceptions on English needs in engineering classes and views on the English language course for the first year students.
- Please check the appropriate answer for the multiple-choice questions and fill in the spaces for the open-ended questions.

Part 1: Demographics

1. Your department is :
   a. Civil engineering
   b. Architecture
   c. Mechanical engineering
   d. Electrical engineering
   e. Industrial management engineering
   f. Information science

2. Your sex is:
   a. Male b. Female

3. Your mother tongue is:
   a. Bahasa Indonesia
   b. Other, please specify: _____

4. Where were you born?_____(city) _____(country)

5. On your last birthday, you were:
   a. Under 30
   b. 30-39
   c. 40-49
   d. 50-60+

6. Please indicate your educational background:
   Name of university/ institution attended :
   Length of study :
   Degree obtained :
   Language used :

7. Please indicate your teaching experience:

   Name of university/ institution :
   Length of teaching :
   Language used :

8. How many classes do you usually teach for an academic year?
   a. Fewer than 2
   b. 3
   c. 4
   d. 5 or more

9. Do you teach first year students?
   a. Yes b. No

10. Please specify the name of the engineering courses that you are teaching this semester:

Name of course	Major
_____	_____
_____	_____
_____	_____

11. How long have you been teaching at the Faculty of Engineering at Petra Christian University?
    _____months / years

Part 2 : Perceptions of Students' English Needs for Engineering Studies

12. How important do you think the English language is in your students' current engineering studies?
    a. Very important b. Important c. Somewhat important d. Unimportant

13. How important do you think English language is for your students' future careers ?
    a. Very important b. Important c. Somewhat important d. Unimportant

14. What percentage of the textbooks for your course is in English?
    a. 0-25% b. 26-50% c. 51-75% d. 76-100%

15. Do you ask your students to write reports and research papers in English?
    a. Always b. Often c. Occasionally d. Never

16. Do you ask your students to write test answers in English?
    a. Always b. Often c. Occasionally d. Never

17. How do you present the course content in your oral lecture? (select one)
    a. In English
    b. In Bahasa Indonesia, with engineering terms in English
    c. In Bahasa Indonesia

18. What percentage of the reading assignments for your students are in English ?
    a. 0-25% b. 26-50% c. 51-75% d. 76-100%

19. Which of the following English language skills do you feel are more important than the others for your students to improve in their current engineering studies?
    a. Listening b. Speaking c. Reading d. Writing

20. Please indicate the reasons for the most important and for the least important skills to be learnt :
    _____

21. What English problems do you think your students are currently facing in their engineering studies? You may select more than one option.

    a. Limited vocabulary
    b. Poor grammar
    c. Poor listening comprehension
    d. Poor speaking skill
    e. Slow reading speed
    f. Poor writing skill
    g. Poor reading comprehension
    h. Poor understanding of charts graphs (graphic organizers)
    i. Poor understanding of cultural context
    j. Other (specify)_____

22. Which of the following tasks do you require your students to do in English ?

    a. Reading engineering textbooks and journal articles
    b. Presenting oral reports
    c. Understanding English engineering terms in class lectures
    d. Make notes of reading passages
    e. Discussions
    f. Doing tests
    g. Writing research papers
    h. Writing lab reports
    i. Other (specify)_____

23. Do you prepare lecture handouts for your students?
    a. Yes b. No

24. If yes, what language is used for your handouts?
    a. In English
    b. In Bahasa Indonesia, with engineering terms in English
    c. In Bahasa Indonesia

25. What problems do you think your students have with their assigned readings in English?
    _____

26. What language do you think should be used in the engineering course texts?
    a. English b. Bahasa Indonesia

    Please specify your reasons:

    _____

27. If you use English text for your class (s), how much of an effort do you have to make to develop support materials in Bahasa Indonesia ?

    _____

Part 2: Views about the English course

28. Should the materials in the English course be related to the engineering field?
    a. Yes b. No

29. What percentage of English materials in the English course should be related to?
    a. 0-25% b. 26-50% c. 51-75% d. 76-100%

30. Do you think there should be a required general English course for first – year students (not an English for Engineering Purposes course) ?
    a. Yes b. No

31. Do you think there should be a more specific English for Engineering Purposes (e.g. English for Civil Engineering) courses ?
    a. Yes b. No

32. If you answered yes for question no.31, in what years do you think there should be a more specific English for engineering purposes (e.g. English for Civil Engineering) courses ?
    a. First b. Second c. Third d. Fourth

33. How do you think the specific English for engineering purposes should be offered?
    a. As a required course b. As an elective course

34. Do you think the English course is useful to your students' engineering studies?
    a. Yes b. No

35. If you answered yes for question no.34, in what ways?

    _____

36. If you answered no for question no.34, please indicate your reasons

    _____

37. Do you think that the English course has supported the students to meet the English language demands in their engineering studies?
    a. Yes b. No

Please specify your reasons:

_____

38. What recommendations would you like to make for the English course?

_____

39. What should be maintained from the English course?

_____

40. If the university open an English course for second year engineering students, what should the course focus on (area of specialization)?

_____

Thank you for your help!

APPENDIX A.3 English Instructors Questionnaire

ENGLISH LANGUAGE NEEDS ANALYSIS FOR THE FACULTY OF ENGINEERING PETRA CHRISTIAN UNIVERSITY SURABAYA INDONESIA
Questionnaire for English Instructors

Instructions

- The aim of this questionnaire is to obtain information about the English language needs of engineering students. Please include your name, it will not be used in any reports about this project.
- Please check the appropriate answer for the multiple choice questions and fill in the spaces for the open ended questions.

Part 1: Demographics

1. Your sex is:
   a. Male b. Female

2. Your mother tongue is:
   a. Bahasa Indonesia
   b. Other, please specify: _____

3. Where were you born?_____(city) _____(country)

4. On your last birthday, you were:
   a. Under 30
   b. 30-39
   c. 40-49
   d. 50-60+

5. Please indicate your educational background:

   Name of university/ institution attended :
   Length of study :
   Degree obtained :
   Language used :

6. Please indicate your teaching experience:

Name of university/ institution	Length of teaching	Language used
_____	_____	_____
_____	_____	_____
_____	_____	_____

7. How long have you been teaching at the Department of General Courses Petra Christian university ?
   _____months / years

8. How many English classes do you usually teach for an academic year?
   a. Fewer than 2 b. More than two

9. Did you teach English course for engineering students last semester?
   a. Yes b. No

10. If no, students from what departments did you teach last semester?

_____

Part 2: Information about the English Course for Non-English Majors

11. How specific is the English course?
    a. The focus on general EAP
    b. More specifically on some areas of science (engineering, business)

12. What is the aim/scope/projected outcome(s) of the English course?

_____

13. What is the length/duration: (number of hours per week, number of weeks/semesters etc.) of the course?

_____

14. What is the course outcome(s): Is it credit-bearing? Is it essential part of the degree? Or does it give additional certificate?

_____

15. Is there any interdepartmental collaboration?
    a. Yes b. No

16. Who is responsible for running the course?

_____

17. How was the demand for the course identified/established?

_____

18. Who designed the course?

    a. Teacher(s)
    b. Course designer(s)
    c. Both in consultation

19. Was there an attempt to analyze needs?
    a. Yes b. No

20. If so, how was it done?

_____

21. How was the input collected?
    a. Surveys for students

b. Interviews with students
c. Surveys of faculty
d. Interviews with faculty
e. Other

22. Who contributed to the input?

a. Potential learners
b. Potential employers/subject
c. Teachers

23. How were the objectives identified and converted into the syllabus?

_____

24. Who is/was responsible for materials development?
a. Teacher(s)
b. Course Designer(s)
c. Materials Writer(s);

25. What is the average level of proficiency in English of the learners?
a. Beginner
b. Intermediate
c. Advanced

26. Does relationship between the specialist subjects (engineering professors) and language teachers exist?

_____

27. What are the goals of the course?

_____

28. What skills are emphasized?

_____

29. What is the frequency of self-study, seminars, group discussions and face-to-face interaction?

_____

30. What Technical Resources are available/required: The role of media, audio-visual aids, radio and TV, computer packages, self-access kits, etc.?

_____

31. What type of materials are used ?
a. Self-designed (in-house)
b. Specifically written for the course
c. Adapted from published sources
d. Published text

Mention the title(s): _____

32. Are they being used as
    a. Textbook
    b. Sourcebook
    c. Resource book (supplementary material)

Part 2 : Perceptions of students' English needs for engineering studies

33. How important do you think the English language is in your students' current engineering studies?
    a. Very important b. Important c. Somewhat important d. Unimportant

34. How important do you think English language is for your students' future careers?
    a. Very important b. Important c. Somewhat important d. Unimportant

35. Which of the following English language skills do you feel are more important than the others for your students to improve in their current engineering studies? (Rank them this way: 1= most important , 4= least important. Rank all.)

    a. Listening b. Speaking c. Reading d. Writing

36. Please indicate the reasons for the most important and for the least important skills to be learnt :
    _____

37. What English problems do you think your engineering students are currently facing in their studies? You may select more than one options.

    a. Limited vocabulary
    b. Poor grammar
    c. Poor listening comprehension
    d. Poor speaking skill
    e. Slow reading speed
    f. Poor writing skill
    g. Poor reading comprehension
    h. Poor understanding of charts graphs (graphic organizers)
    i. Poor understanding of cultural context
    j. Other (specify)_____

38. What problems do you think your students have with their assigned readings in English?
    _____

39. What language do you think should be used in the engineering course texts?

    a. English b. Bahasa Indonesia

    Please specify your reasons:
    _____

Part 2: Views about the English course

40. Should the materials in the English course be related to the engineering field?
    a. Yes b. No

41. If you answered yes for question no.42, what percentage of English materials in the English course should be related to engineering?

    a. 0-25% b. 26-50% c. 51-75% d. 76-100%

42. Do you think there should be a required general English course for first – year students (not an English for Engineering purposes course) ?
    a. Yes b. No

43. Do you think there should be a more specific English for engineering purposes (e.g. English for civil engineering) courses ?
    a. Yes b. No

44. If you answered yes for question no.45, in what years do you think there should be a more specific English for engineering purposes (e.g. English for Civil Engineering) courses ?
    a. First b. Second c. Third d. Fourth

45. How do you think the specific English for engineering purposes should be offered ?
    a. As a required course b. As an elective course

46. Do you think the English course is useful to your students' engineering studies?
    a. Yes b. No

47. If you answered yes for question no. 46, in what ways?
    _____

48. If you answered no for question no. 46, please indicate your reasons
    _____

49. Do you think that the English course has supported the students to meet the English language demands in their engineering studies?

    a. Yes b. No

    Please specify your reasons:
    _____

50. If you use a commercial text for your class(es), how much of an effort do you have to make to develop support materials ?_____

51. What recommendations would you like to make for the English course ?
    _____

52. Given a choice, what would you like to change in the course?

_____

53. What would you like to retain from this course?

_____

54. If the university open an English course for second year engineering students, what should the course focus on (area of specialization)?

_____

55. Please feel free to make additional comments about the English language course.

_____

Thank you for your help!

APPENDIX B

APPENDIX B.1 Interview with Engineering Lecturers

- Is ability in English really crucial to be able to meet the demands of the engineering courses?
- Do students have the necessary English skills?
- Can students manage with the level of difficulty of the courses if they don't have adequate English skills?
- Do students have problems with reading set textbooks?
- If so, are these problems owing to the inherent difficulty of the subject content or the language?
- What are the differing language demands from the various core subjects? Do they overlap considerably in different engineering department?
- How does the English course help the students to improve their English?
- How does the English course help students to prepare for their future career?
- What do you expect an English instructor to be able to do?
- What specific expectation do you have?
- Would collaboration from subject lecturers and English instructors be useful?
- Should there be specific, targeted programs or general courses offered?
- Should there be a supporting EAP program or other complementary skills-based course offered?

APPENDIX B.2 Interview with English Instructors

- Does the English course help the students to be successful in their studies?
- Should the English course be relevant to engineering?
- How does the English course help students to prepare for their academic studies?
- How does the English course help students to prepare for their future career?
- What is the focus of the English course?
- Would collaboration from subject lecturers and English instructors be useful?
- What are the differing language demands from the various core subjects? Do they overlap considerably in different engineering department?
- Should there be specific, targeted programs or general courses offered?
- Should there be a supporting EAP program or other complementary skills-based course offered?

APPENDIX B. 3 Interview with Engineering Students

- Is ability in English really crucial to be able to meet the demands of the engineering courses?
- What is the most important English skill(s) to be improved?
- Can you manage with the level of difficulty of the courses if you don't have adequate English skills?
- Do you have problems with reading set textbooks?
- If so, are these problems owing to the inherent difficulty of the subject content or the language?
- What are the differing language demands from the various core subjects? Do they overlap considerably in different engineering department?
- How does the English course help the students to improve your English?
- How does the English course help you to prepare for your future career?
- What do you expect an English instructor to be able to do?
- What specific expectation do you have?
- Would collaboration from subject lecturers and English instructors be useful?
- Should there be specific, targeted programs or general courses offered?
- Should there be a supporting EAP program or other complementary skills-based course offered?

APPENDIX C

APPENDIX C.1 INTERVIEW TRANSCRIPT
Lecturer 1

R: How important do you think English for engineering students?

L1: English for engineering students, especially for civil engineering, my area, I think is very important. From the theory for example, when we are studying, even though there are many translation version of the textbooks available, but to dig up broader resources, it is not easy to translate some materials into Bahasa Indonesia, especially I am teaching *Concrete Technology*, some terms, have vague translation version. For students, they might be used to and more comfortable with Bahasa Indonesia as the first language, but I think it is better if they get used o the original terms (in English). Even there are many Indonesian writers, but for technology development especially in the area of civil engineering, we have to understand English, at least in receptive skills. For instance how to operate computer, many programs having English guidelines, if we know how to operate by listening to others, it is not enough, we need to understand other things, there are weakness to anticipate, and we know them from guidelines.

R: So you're saying that engineering students, especially civil engineering, are now really dependent on computer?

L1: Yes, right, before PC era was broadly used, structure calculation was by manual, but for now, it is outdated. Now we do it by computer, in which is more effective time wise. In the design, you know earlier I was talking about theory,... but later on, in practice, in the work place,... not because it is the computer era, but because it is impossible to do it manually, it takes too much time. Not to mention when there is a redesign, by computer, it is easier. Computer and English seem to have a very close relationship. In practice we often communicate with other parties, extremely, the foreign consultant or assistant consultant, who will speak in English. It demands students to use English actively. But at least they can use English "receptively" like rules issued by other countries. For concrete, the rules can be from US/UK Standard or ACI (American Concrete Institute). Three are popular in Indonesia, the third one is from Japan. Japan Industrial Standard. In practice, so, at least, if the document is English, they have to be able to read it.

R: You mentioned earlier about foreign consultant, so do they students have the task to communicate with them and then they have to write a report?

L1: For regular class, it is not required, it is when they have already graduated. It is possible to communicate with them, it is also not. If they have to meet them, then English is needed. If not, then at least, they have to be able to read specifications. Civil engineering is broadened into construction management program. English is very needed there since so many contracts will be in English. For me, since I do not get used to read them, then it is quite difficult for me. But since my area is in concrete laboratory so I get used to read specifications instead. But for project contracts, even recently I often heard that for some big scale national contractors, they require the staff to join English private course, to prepare them to be able to read the contracts. If they do not understand the contract then, it is possible that they might be trapped.

R: That is to prepare the students for the future, in their career.

L1: Yes, for their future. As a teacher, we cannot be ignorant with their future.

R: What do you think about English skills that are mostly needed by the students, or that are useful for their engineering studies?

L1: Number one is reading, that is at the least, if they can speak, it can be an extra point for them. Especially for globalization at the year 2003, we must be prepared, so that we can compete with for instance Philippine, many of the Filipinos will come here...and they are more proficient in English, actively or passively.

R: In your own class, do you give them any English reading assignment?

L1: For calculations, most of the books I used are in English. There is only one, which has the translation. But for *Concrete Technology*, they have to read in English. And it happens that Mr. Paul Nugraha has written the Indonesian versions of the book. Before the book was written, it was quite difficult for the students. So before the book was ready, when I gave lecture, the one in which you were sitting in on ...

R: Concrete Technology II?

L1: Yes, it was calculation, which was not too difficult for the students, even the book was in English, it was quite OK since they could learn from examples provided in the book. But for those having extensive texts, students needed to work harder sine they have to comprehend the steps, definitions, and then concepts.

R: And so far the one that students are using is the handout?

H: No, it is not, it is the textbook, (literature). That is not the only one that I am using, in *Concrete Technology II* class, one of the chapters is using the (Indonesian) book, but others are using English. But the materials used in class, is in Bahasa Indonesia.

R: So, in other words, eventhough they do not read the textbooks, but if they follow the class, then they can understand the concept.

L1: Yes,

R: Did you give reading assignment to the students and then assess them?

L1: That one was in *Concrete Technology* class, sometimes I asked them to write papers, but since know that course is included in *Concrete Technology I*, if we give them that assignment, the load is going to be very heavy. But in other course, quality control, I gave them reading assignment, so I asked them to write papers, and of course they have to search journals for references, and they wrote in Bahasa Indonesia. And they have to understand the English journals.

R: The handout used in your class *Concrete Technology II* was a mix between English and Bahasa Indonesia.

L1: Yes

R: Did students complain about the English textbooks?

L1: I think it is getting better every year, in the sense that probably at high school students have studied how to read (English), so I think they have no problems. It is only that they have problems in some vocabulary for instance *bow plank*, *bow* in Dutch means *building* and *plank*,...how about in English? Students pronounced it in the wrong way ...(overgeneralization of "a" sound) It is originally from Dutch. Because I knew this particular student who actually has a good TOEFL test score but just mispronounced it...

R: Besides reading, what other skill do you think students will need?

L1: For my class *Concrete Technology*, writing is also important. Besides teaching, I happen to be a consultant. Often enough when I am designing and I am making the calculation in Bahasa Indonesia, whereas actually the result is going to be checked by the joint venture company which is from foreign country, they asked me the English version. In some cases, since the resources are in English, it is easy for me, it does not have lots of sentences, ...I could take it from the textbooks, it is an example of the writing. If we want to learn English we have to use it!

R: OK, so how about students' assignments?

L1: Assignment are not in English no...they can translate it...But for terminology, I said no translation...for example workability a book translate it into "kekentalan" *(Indonesian translation),* another book said "kelecakan" *(Indonesian translation).* It makes it more difficult, what is "lecak"? *(Indonesian translation).* If we see from the word itself, it is not difficult, it is something "workable", it is easier to explain it to other people. So when students write their final project, I allow then using that term even the paper is in Bahasa Indonesia. It does not mean that if we use English we don't have the sense of nationality. It is OK to use several English terms as long as it does not cause ambiguity, if it creates another meaning just like the example I showed you earlier, then it can cause trouble to the students and there are many other examples like that...

R: About the English course, the Department of Foundation Courses (DFC) gives freedom for each department whether they want to offer the DFC course or administering it my themselves, like in the case of industrial engineering. How about in Civil Engineering Department?

L1: I am not sure about the English course but we want to make sure that it is related with civil engineering...so it is not too general. If it is general then the teachers who teach at DFC do not have any engineering background. So they do not know what the civil engineering students really need. For example, the word "concrete", those from civil engineering majors will know that it is "beton" *(Indonesian translation)* but from those from English Department for instance they will think which context the word belongs to, but civil engineering people would tend to refer to "beton".

R: Does Civil Engineering Department have English for civil engineering, so the course is not the one from the DFC?

L1: Sorry, I am not sure about this you can ask the head of the department...but I know that the readings should be about engineering, including mechanical, and so on...

R: Which one do you think is better for students, specific or general?

L1: I think for some cases, to motivate students in their engineering studies, the course should contain some "building' topics, if other topics are added, it is okay. Since I think it is not necessary to narrow down the topic too much – all terminology must be "building" specific. That is just to motivate since civil engineering students sometimes are too reluctant to study English, frankly speaking. They would say it has nothing to do with my major, whereas actually it is relevant, at least in the area of grammar. Grammar is necessary. For engineering specific terminology, students can learn about them along the way, especially when they are taking the course requiring them to get familiar with the vocabulary. So, if they learn all technical words at the beginning in the English course, away before they take the course, then it is difficult, even for the teacher. Why? Because those who are teaching the terms must have civil engineering background, whereas if they are asked to teach English, I don't think it works! Since their grammar is not going to be as good as those from English majors. It is dangerous!

R: Your ideas can be related to the university's plan to be bilingual in which some courses offered would be in English.

L1: I really agree with that. Whether we like it or not, we have to take that step.

R: Which courses do you think is suitable to be given in English, as the medium of instruction, materials, or assignments.

L1: So everything is in English, the instruction, assignments, books...
Yes,..ehm...I think it depends on...I am worried that it depends on the lecturer, if the methods of delivery is not communicative, it can blocks the way to let students absorb the content of the knowledge itself. For example, the one which can be easier for the students since there are not many sentences to cope with, not too much readings. It is the course *Structural Analysis*. But the problem is that this course is the foundation skill course that is important since it serves as the base for other skill courses in civil engineering. It might be easy for the students since it directly involves students to do exercises, with numbers. And for the textbooks, nowadays, there are many English version available, but not in the past...The one, which has lots of theories, might be very difficult to the students,

R: But for this one *(referring to some course titles),* it is relevant to ...

L1: *Concrete Technology*

R: You think this one is easier for the students since there are many ...

L1: numbers. And students can guess the meaning of what is written on the textbook by referring to the examples. Probably we can start with that one and then we can move one step forward. And maybe the university expects all courses will be in English years later. But the plan must be very secure, because we must avoid later on the students can be more advanced then the lecturers can...because sometimes we can see very bright students...in terms of speaking, since they have already been prepared since high school.

R: In what occasion did you ever hear them speak English?

H: When there was a guest visiting the laboratory, and then the students there at the laboratory, and they were asked to explain something by the guest, since it looked like the guest was interested in them who were not prepared before...

The telephone ring, L1 receives the call from the head of the department...

L1: I just asked the Head of the Department about the English course and he said civil engineering students must join the one from DFC.

R: You mean it used to be specific from the department?

L1: I think so..

R: And if the EMI was tried out in the course Structural Analysis, the lecturer commented that it was too risky. He did not mean that he did not agree, but if he saw the risk may happen....like I said before... students may misinterpret the concepts due to language problem, since English is not the first language for the lecturer. That's why if I am not sure which one can be tried out, but if we are talking about the level of difficulties, since it is quite low, so it might be OK to be tried out. But it is risky since it is the foundation skill course, a prerequisite for a more advance engineering course. What worried the lecturer was that though it was given in English. It was worse if the students turned out not understand the concepts. Since even in Bahasa Indonesia, some of them could not comprehend. But some suggested a mix - so English textbooks, assignments in English, but the instruction was mixed or what...but some said learning English is not supposed to be that way ...should be spoken in a correct way...I don't know which one is better...

R: In other words, we are not ready...

L1: Yes, since it should be from both ways, from the teachers' side, if they are not ready, I am also afraid that the concept can be misinterpreted, the instruction is not clear, and because of that limitations, it can cause trouble. But if I am asked, I would say English is important, since as soon as they graduate, they would have a extra point if they can use English receptively and productively. For sure, that is the positive side, for the knowledge, I think it is more or less the same with English, it is an extra point.

R: What did the department do to prepare for the bilingual campus?

L1: In Civil Engineering Department, the lecturers were suggested to join courses, handled by a lecturer from Tourism Department in the past.

R: I learnt that many graduated from abroad?

L1: Some, but giving English instruction is not as easy as graduating from abroad. S/he might be difficult to catch when giving EMI. Some might be good at EMI.

R: So, there used to be a course for teachers?

L1: Yes, but it was not smooth due to time limit. When everyone can gather, and when we could gather, there was an unexpected meeting, and so on...we had the course but it was not like there was a formal assessment and requirements to attend certain numbers of meeting, which if there was, then there would be a continuous assessment.

R: So not students but the teachers,

L1: yes

R: you mentioned earlier about guests, do they visit often?

L1: not in class, but in the laboratory...

R: was it often?

L1: not often . But several times, and there were the students there who were on duty, working there, so they talked. It happened that the students could communicate. I think foreigner are aware, if they ask one or two questions and then answered, then they would continue talking...

R: Are they foreign professors?

L1: Visiting from Europe, Dutch, they visited the lab, they were university guests, and were taken around the campus...

R: Visiting scholar?

L1: They were seeking students for collaboration with Petra.
R: *unclear.....???*

L1: Yes, and besides, concrete laboratory is open to give service to the public. Sometimes, there were guests who were foreign consultants, sometimes they came to our laboratory, and they met Petra students there,...some wanted to get to know them better. So they talked..

R: What did Petra serve?

L1: For examining ... so to test the quality of the concrete, they ask Petra to do it. So, the lab is for students and public, which may be expatriate. The one I know is PLN, having foreign consultant.

R: Speaking is needed in this case

L1: Yes

R: How about writing lab report?

L1: In English, by the laboratory assistant, students who are recruited as the assistant.

R: Graduate already?

L1: Final year students

R: Thank you very much!

APPENDIX C.2 INTERVIEW TRANSCRIPT
Lecturer 2

R: Can you please say that again?

L2: As far as I know, English for Architecture is different from those in English Department for instance. English for engineering, especially for that which is more technical like *Structure*, *Structural Analysis*.

R: *Structure* is...

L2: the course which I am teaching right now, the English skill needed I think is technical, very simple...

R: In what ways is it simple?

L2: In the grammar, content, I think it is so simple. Those having so many theories, such as history or other theories, I guess those require more advanced English. So they have different levels, I would say.

R: Yes...

L2: That's why we see the lecturers who pursued degrees abroad, for Civil Engineering Program for instance, they were not required to master English language skills as high as those history majors, for instance, since history has lots of theories...

R: For *Structure* course, the important part would probably be vocabulary,

L2: Yes, vocabulary, and the content is not too complicated, I think.

R: Simple grammar probably?

L2: Yes. There is a book called *Structure and Architecture* by Mario Salvadori, I think it is quite simple, the way he elaborates, the way he uses the language,..

R: You use the book for your course?

L2: One of the book that the students need to read.

R: Required?

L2: No, it is recommended. Parts of the book has already been here *(pointing out to his handouts).*

R: I see...

L2: From this thick book, some parts, which were considered to be important for the students, was taken, and then translated into Bahasa Indonesia.

R: What is the reason for you to develop this handout?

L2: I wanted to train the students. In class, they have already had background knowledge to talk. I do not use this book to read because my main principle is that students can learn independently, that's why we require them to self-study. We give them materials to study, so that it is not too complicated for them. I develop this material and give this to the students, and ask then to read first, and when we meet in class, it is actually not lecture, tutorial, I actually want them to discuss. After they read, if they have question, they ask me, that is the principle.

R: Is the reality in class that way?

L2: I force them to do so.

R: So they do group work?

L2: No, this is because we have limitations, there are also a limited number of assistants. We cannot give them group work like that. Group work is in the tutorials. *Studio* means designing, we are talking about design, not the theory, it is the applications. But during the lecture session, I usually ask them to read this page until this page, after that I ask them which one is not clear.

R: You have a plan to change this material to be in English, do you think the discussion...

L2: Is in English or Bahasa Indonesia?

R: Yes

K: It should be, to make it ideal, should be in English. Because from what I know, I don't put much emphasis on grammar. As long as I can understand what they are saying. That's all. I would say that is the first step. That's why I wrote (pointing out at the questionnaire) grammar is OK, not too important, how we can communicate well is more important. That's what I said earlier that ehm.... materials discussed in *Structure* course do not require advanced grammar skill. That is what I know. My son/daughter is an engineering major in other university, and s/he must present the assignment in English. It does not matter whether the students' language is good or bad, they must speak up. So it trains them to be courageous in speaking English and are not afraid to make mistakes. Whether they know which one is important, whether the message is conveyed. What I mean by technical is that besides the word itself, there are the visual aids, for instance, computer, they show the program, and there are only few words to explain. Not for discussion maybe, but for questions, I think it is still possible to do it in English.

R: And then Petra Christian University has a ...

L2: Dream... bilingual...

R: Yes

L2: That is a dream, it always happens in a university. The dream is too high, but the program to reach the dream does not match. There is no match between the dream and the program. Since a program, I would say, needs funding, sometimes funding yes, and determination yes, sometimes no determination, teachers are required to do something and they just don't want to. But besides that, students also need to be prepared. We cannot expect something and then we accept students

without any criteria for their English level. Well, I hope they are OK recently...but if they are quite poor then it is a pity...In other university, there is a program in which students are provided with an English course, for free. I think it is covered by other course, so they take English for several semesters, in addition to being required to speak in English.

R: What does Architecture Department do to prepare?

L2: If I may say, there is the dream, it is written,

R: So, it is written,

L2: Yes. Some courses will be in English this year.

R: In RENSTRA (*The University's Strategic Plan)* if I 'm not mistaken.

L2: Right, and it should be implemented within this one or two years ...

R: What do you do?

L2: Not yet so far, so we rely on lecturers graduated from overseas universities. We try to start with them to give lecture and use EMI.

R: And the course is the one, which does not require students to deal with extensive texts, like you said earlier.

L2: Those courses, which require higher English skill, can be a problem. This dream is good, but it must have a proper design, if not, then, it will not work.

R: For the preparation to implement the program, how about the English course, does the dept require the students to join those from DMU or architecture has its own English course?

L2: Right now we give freedom for students to choose,

R: Is there any internal English course from Architecture Department?

L2: No, not yet, we give freedom to the students. The students or the prospect students who have various level English proficiency. Some have high level some are not. Those having good English, do not take the course, but those who are not, have to take it. We let them free right now, that is why English is not a required course. It is an elective course. So in our new curriculum 2001, English is an elective course. Those students having good English, do not need to join the course, they can take other courses.

R: And those offered by the DMU is general English.

L2: Right, and what we expect is actually if we want it to directly useful to the students, it should be English for architecture. So, for examples introducing English terminology for architecture, it is more useful, compared with general English, I am not sure what is being taught there...is it grammar like those in high school.

R: I heard from the students it is like those in high school.

L2: Then it is useless, it's like repeating. I'm not sure it is not our focus for the time being.

R: Is there any plans from the department to offer a specific English for architecture majors? And the instructor is from Architecture Department not from DFC?

L2: I think ...well...we still do not have clear framework, but I think we have to go that way...But actually, I would prefer directly in first or second semester, so...certain foundation courses are using EMI. Since high school students who are motivated enough can do that. That's what I think and one of the student's weaknesses is the terminology/vocabulary.

L2 went on with the questionnaire...

R: Why didn't it *(the conversation club for lecturers held in the past)* work?

L2: Because the conversation club was from certain parties, if we wanted to make it public, then it should have involved more communication...

R: What do you mean by certain parties?

L2: Limited to those who were interested,

R: Those were for lecturers...

L2: Not lecturers, only several lecturers. The conversation club was something like only for those who wanted to. But, for the usage, actually the needs of English is not realized in my opinion. If people are really aware of it, then it can grow. Everything depends on the needs, if I need to communicate in English, then I learn English, if not then what is it for?

R: So you think that English is not needed?

L2: People don't feel about it yet. If I am asked, I would say it is needed, for improvement, English is needed, without it, then it is a big problem. But many people don't feel the needs. That's the problem, so it's difficult. It depends on our own needs, what is our motivation to learn, so motivation I would say... Students should also be given motivation, you should learn English and this is the goal. If students have no motivation, but they are forced to learn English, it will be hard.

R: Did you ask students about their English needs?

L2: I didn't ask that, but from my perceptions, it is very needed.

R: Which skill?

L2: I would say reading...

R: Since the textbooks are all in English?

L2: Yes, for speaking, it is no. 2, but reading is no.1.

R: How about writing?
L2: Writing is not really needed since it is seldom used for communication,

R: Not for assignment?

L2: No, seldom, after reading, it's speaking at least, but writing is seldom, it is no.3, I would say.

R: Listening?

L2: Listening is actually important.

R: Are there any tasks involving students to listen in English?

L2: That's rare, we don't have much audio materials, we don't have it, maybe there is but it is seldom used...

R: Because it's architecture?

L2: Yes, it must be very hard for Architecture majors to deal with listening task in English. I guess it is more important for English department...

R: Do you (students and lecturers) need to be prepared to host expatriate guests?

L2: Very rare.

R: Maybe only once or twice,

L2: Yes,

R: Did they go to the department and then visit the class?

L2: Never

R: Maybe only the administrators

L2: Yes, administrators or certain teachers

R: So, not involving students?

L2: No contact, except if they want to give lecture, so it is in English and the students joined,

R: Did it ever happen?

L2: Yes,

R: Is it often? How many times in a year ? How about the frequency ?

L2: The thing is that we don't have the money to invite those people, we had the chance to talk/listen to them when other department, civil engineering for instance, hosted them. So maybe once a year, sometimes none in a year.

R: Thank you!

APPENDIX C.3 INTERVIEW TRANSCRIPT
Lecturer 3

R: How important English is for (mechanical) engineering students?

L3: It is important since many textbooks used are in English. For conventional understanding, mechanical engineering is a passive knowledge, it is different from management...The ways to calculate, for instance, is the same until now. The application is probably developing. So, English is still important.

R: Do you often ask students to read English textbooks?

L3: It depends on the kind of course. If it is a foundation one, there is no much reading assignments. So, I only explain the concepts and the students know how to make the calculations. But for more advanced courses, I give then reading assignments since there are more applications there.

R: When I sat in on your class: *Energy Conversion*, it belongs to...

L3: The second one, which has the reading assignments.

R: If the students ignore the English textbooks, and only attend your lesson, you know, you have prepared hand-outs, which is mostly in Bahasa Indonesia, then do you think they can be successful in their studies? Or does reading the English textbook determine their success?

L3: Half-half. They cannot depend on the lecture/reading 100%.

R: You said earlier that you gave students assignment to read and then make a summary on it. The book is in English and the summary is in Bahasa Indonesia.

L3: Yes.

R: How about task / assignment to search for information?

L3: I did, I asked them to search from the web, but I gave them the address, and then they could access. They printed it out and they had to make the summary.

R: The summary was in ...

L3: Some of them asked, but I said they could choose either English or Bahasa Indonesia. And some of them wrote in English.

R: Did you give them any extra marks/points if they did it in English?

L3: It is better that way, but at that time I didn't have much time...so I just noted who did the summary and who did not.

R: Do you have any plan in the future to really ask them to make the summary in English ?

L3: I think it is too difficult for them since when I told the class that they have to read certain chapter/book and then they would ask whether it was in English. And if yes, then everyone was like ....complaining...so I have the impression that it is difficult to tell them to read, not to mention to ask them to write. I think writing is a more difficult process than reading. So if

reading is a drag, not to mention writing. But if some wanted to try to write in English, then it was ok.

R: Which one do you think is more helpful to students General English or ESP? Just like in Industrial Engineering Department, they provide a specific English course for engineering.

L3: I think General English does not only cover reading but also other skills. But for specific, I think the focus is on reading, grammar, or writing which is relevant with the major. For Mechanical Engineering Department, we have not decided yet...(*question about the English course for industrial*). But I think that is good.

R: Supposed Mechanical Engineering Department offers the English course, which one do you think is more helpful, General English or ESP?

L3: ESP, since it can really prepare / help students to read the English textbooks.

R: So far the most needed skill is reading...

L3: Yes

R: If the university has a plan to be bilingual?

L3: It is good but we need to prepare.

R: Is the department ready?

L3: *Mention a name of a lecturer* might be ready, but not myself.

R: Why?

L3: It means that I have to redesign the handout...so many works to do.

R: So the lecturers are still not prepared...

L3: Still 35%,

R: and the students?

L3: Even less, they still have difficulties in reading.

R: Thank you!

APPENDIX C.4 INTERVIEW TRANSCRIPT

Lecturer 4

R: How important, do you think, is English for electrical engineering students?

L4: I think it is very important since the development of electrical engineering mostly comes from outside, compared with from inside. So if we want to update ourselves with the information, we have to know English, at least, how to read English discourse. As for journals it will be too late to wait for the Indonesian version. Especially in this globalization era, so many expatriate workers are coming, and if we, from Indonesia can communicate using English, we can be more prepared to compete with other electrical engineers / technicians from outside.

R: For Petra students, do you think reading is the most important skill?

L4: The one that I perceive to be the most important is reading, and if they can communicate (speaking) in English then it can be a lot better. But I see that the English proficiency of the students is still very low. Based on my experience, I asked them to read English textbook, and then when I asked them to write the main ideas of what they were supposed to read, and actually it could be seen from the subheadings, they failed to do so. When I asked them why it was very difficult since actually they could find the answers from the subheadings, they said they just did not understand. So I think even their reading skill is very poor. So it is not the content that made them fail but the reading skill itself.

R: Did you test them on their English skill or the content / knowledge of the textbook?

L4: The content. I asked them to read English textbook and then I tested them during the midterm exam and I checked the content, but because of the language, they failed.

R: So supposed the test was in Bahasa Indonesia, then they might not have been failed.

L4: Right, it looks like it will be easier for them.

R: Did you always give them reading tasks?

L4: Sometimes. If the time allowed, I would give them paper to do or reading assignment.

R: Did you ask them to write the paper in English?

L4: The paper was in Bahasa Indonesia but the references were in English. So they had to translate.

R: When I observed your class the other day, you were discussing the answers of the small test with the students.

L4: Yes, that's right.

R: For the regular classroom activities, how did you give the lectures? Did you use handouts, or did you ask the students to directly refer to the textbook?

L4: I mostly use the transparency. So I refer to the transparency. Sometimes I asked the students to refer to the textbook, but that is seldom, I use transparency most.

R: The handout is in...a mix of Bahasa Indonesia and English?

L4: But it is mostly in Bahasa Indonesia. Maybe for the next semester I will try to use English handouts.

R: You said that the students' academic success will depend on their English reading skill since most reading is in English, or do you think that even though they do not read the English textbook. But if they come to class regularly, they would be able to pass the exam, or the English reading ability is really important to be successful, what do you think?

L4: If they come to class regularly, they can pass the exam, only for the sake of attending/ understanding lectures. But for overall, until the final year of their study, when they have to do the final project. I think English is very important. So if they only depend on lectures which are in Bahasa Indonesia, they would have difficulties during the final year. In other words those students, whose English proficiency is not too good, will not be able to perform the best for their final project.

R: And the final project was in Bahasa Indonesia?

L4: Yes, but the references were in English.

R: Did you require the students to search information from international journals?

L4: I did, but not regularly, I remember last time I asked the students to find certain topic from the internet (about transmission) and they could not find it. But basically I did ask the students to do it.

R: I heard that the DFC gives each department a freedom to offer the English course, whether as an elective or a required course. How about Electrical Engineering Department? Is there any English for electrical engineering students offered by the department?

L4: No. We don't have that. So DFC administers the English course for our electrical engineering students, as a required course. I am not quite sure, but recently I think there has been a change in the curriculum, English used to be a required course. Now it has become an elective course since there have been an increasing number of credit hours for religion course, from 4 to 6, so English is shifted to be an elective course. It used to be religion 1, 2, 3 in which 2 credit hours for religion 1, 1 credit hour for religion 2 and 1 credit hour for religion 3, so the total number of credit hours for religion is 4. But now, there is an additional course namely *Ethics Profession*, *Christian Religion* and one more course I forgot, it's probably *Ethics*, which makes it 2 additional credit hours. Whereas we do not want the students to take too many courses from the DFC (there is a limited number of credit hours from DFC courses that have to be taken by the students). We do not want students to take so many DFC courses that they have less core courses from the Electrical Engineering Department. Because based on the new curriculum the total credits required to be taken by the students have been made compact, from 160 to 155 and now is 144, and DFC courses cannot be added, so English automatically becomes the elective course. It used to be a required course, so students could choose others as the elective course. And now it is elective since religion, civics and State ideology are required.

R: For first year students?

L4: For instance, a course from the DFC called *Ethics Profession* is intended for final year students. So students from any year of study can choose English.

R: So it is not for first year students.

L4: No. But I hope that with the university's plan to be bilingual, a kind of TOEFL test will be applied. I hope it can substitute, so those who have low score of the TOEFL equivalent test can take private English course outside. Or they can take any private course at PCU but outside the curriculum.

R: To improve the students' English skill, you think that it is better for them to take private course outside the university?

L4: Yes, if we offer the English course as a credit-bearing course, then the content–course (electrical engineering) will become less, whereas we actually have already deducted some electrical engineering courses within the curriculum. It becomes 144, so it is compact. So, they improve their English skill by taking private course outside.

R: The English course offered by DFC right now is general. What do you think about it, it is important for the students for their engineering studies or the ESP is more important?

L4: I think ESP is better. The students have already learnt General English in high school. By taking ESP, they can learn more about electrical engineering in specific. Since I think the language of magazine, literary work and textbooks are different. So I think it is better to be more specified in the engineering topic. And if I'm not mistaken, the required English course offered several years ago was ESP. I have no idea about the content since I never checked. But I remember when I was still a student here at Petra, I remember the material was more on the electrical engineering topic. The topic was about atom, so it was specifically physics; not yet electrical engineering in details, so it was not General English.

R: Was the English course at that time handled by the Engineering Department or DFC?

L4: Still DFC, and it was a required course.

R: How about the instructors?

L4: From the DFC. It was actually not ...you now we cannot provide any English instructors. So the best way out for now is to ask DFC to administer.

R: Are students encouraged to take private courses outside?

L4: Yes. And also English reading assignment is added, and also the usage of English textbooks is increased, I think that can help.

R: Do you know why they changed it into General English?

L4: I am not sure. For DFC, we never thought a great details about it, we never asked much just tell them that we would like the English materials to be more specific on engineering, and that was all. And we never evaluated it since we asked them to take care of it.

R: How about communication with English instructors from DFC?

L4: Not for the past few years. For next year, maybe it is important, but for now, we haven't done it yet.

R: The university has a long-term plan to make the campus bilingual, what do you think?

L4: I really agree on that. The university may have a plan, but I guess there is not enough support. It is difficult for each department to move forward. The Electrical Engineering Department is using English handouts for lectures as a kind of effort.

R: Is it required?

L4: No. We recommended the lecturers to use handouts and transparency in English. Even though the lecture is in Bahasa Indonesia, but handouts, transparency and textbooks are in English. They have to avoid using Indonesian textbooks. It is to give more practice for the students to read in English. Lecture in English is still difficult since the students' English proficiency is still not adequate. But if we can get the result of the TOEFL equivalent score of the students as the university has planned, as a part of the university exit test, so it will determine whether applicants are accepted or not, then we can do it. Since there is no such text, and the students' English proficiency is still low, so we hesitate. The second thing is that most of the lecturers got master's degree from US universities, but since they were there only one or two years, they are still not confident in giving English lectures. What we did is that we held a seminar/ a talk. We did that when there was a visiting scholar coming, we invited him/her to give English lecture. For the next financial academic year we will propose to the university to invite visiting scholars, who have engineering background to give a lecture.

R: As a visiting lecturer or recruited as a full timer?

L4: Well, as a visiting lecturer for one year. We are still trying. The problem is that we have to consider the students if we want to request them to take the course. Some students have no problem on it but some even cannot afford to take an English private course outside. We have to think about this kind of support from the university. Just like what a university in Surabaya did. If students can give oral presentation in English for their final project, then they will have higher marks. But they offer a free course for the students. They also offer some lectures in English, which are required courses. If the students complain that it is too difficult for them, then they cannot blame the school since they have already provided such facilities.

R: Thank you!

APPENDIX C.5 INTERVIEW TRANSCRIPT

Lecturer 5

R: How important is English for the engineering students? It is important, but how important is it?

L5: Yes, it is important. It is very important. If they do not understand English, it is difficult for them to be able to follow the engineering lecture. Because most of the textbooks in engineering (in general) are in English

R: So, in terms of reading?

L5: Yes, reading

R: Are the students required to read the English textbook?

L5: For my course or other engineering courses?

R: For your course?

L5: I don't require them to read but if they don't do it they will have difficulties in the lecture. The transparency/ handout that I made is only the summary/ too broad. So they have to add knowledge and understanding.

R: So that does not mean that without reading the English textbook, as long as the student attend the lecture regularly, then they would be successful?

L5: I think they would face difficulty. I am not talking about every course. For my own course, there is *Engineering Economics* and *Industrial Chemistry*. For the latter, there are so many rules, and laws from the Indonesian government, so students do not need to read many textbooks in English for this course. But in general, students still need to read English textbooks. But not in all courses ...

R: So I was lucky to observe your other class, *Engineering Economics* ... I found quite many English used...

L5: Yes, exactly... *Engineering Economics*... I guess the students must read ..

R: Has ever been any complaint from the students that they have difficulties in understanding the English textbook?

L5: Textbooks? Yes definitely there were complaints, but now it seems like they get used to it... it's the same as the first time I gave them an English assignment...First, it saved me lots of work since I did not need to translate... I just took them from the textbook...and students just copied. That was my first goal, but other reason was for the students to learn. That was the goal. But at first they really complained...

R: Why did you choose that course to try to use English ?

L5: So why not the other one is that what you mean?

R: Yes

L5: It is easier since most of the references used are in English.

R: Is there any plan/ enforcement from the department to do that?

L5: Officially not...but we have departmental goals...for example the homepage for the Industrial Engineering Department must be in English...We hope that there are some courses which can be taken by international students, so courses which use EMI. But at present, we are not ready yet, even EMI is our direction....probably there will be 2 or 3 Industrial Engineering courses every year that can be taken by exchange students.

R: How about at present, is there any exchange student?

L5: No...not in the Industrial Engineering Department...the goal is to go there...we're trying... for exchange students...so those students wishing to join the course must be able to use English...so there are not going to be many courses offered for that purpose...probably two every semester..

R: So it's a long term?

L5: Yes,

R: And at present, skill mostly needed is reading?

L5: Yes, reading and grammar...since if they don't understand the grammatical concept, they would have difficulties in reading

R: How about vocabulary?

L5: Yes, that's right.

R: I heard there are lots of translation version of the textbooks...

L5: Yes, some...if I read the translation version, I think.... It's more difficult...

R: As what you said before...

L5: Yes.... The language is not straightforward and condensed...they have a longer explanation...so it takes more than one time to understand and it's more difficult to comprehend...that's what I think...

R: So is it better to use the English version?

L5: Yes

R: What is the difference between English for Engineering in your department (Industrial Engineering) and the English course from the DFC?

L5: The difference that can be clearly seen is that...for instance in terms of materials, reading in DFC is mostly very general, about environment or culture of a country. For this course (English for Industrial Engineering), the reading is focused on engineering articles, especially industrial engineering...So, I don't know...especially one year ago, I was not here...(*the lecturer was pursuing a master's degree in engineering*) but before I left, I was a secretary of the department, so I knew that at that time we were trying to find an English instructor who

had had an engineering background. So the teaching materials were going to be related to engineering, particularly industrial engineering.

R: Do you think that English course for engineering students should be those related with their engineering studies, and not the one which is too general ?

L5: Because I think the students can learn General English from attending private courses outside the campus. For their engineering studies, I think ESP is better because it can support the students to better understand the lectures.

R: But in the reality is that so many students still have low proficiency, even in their General English skills?

L5: Yes, there are quite many...

R : Can you tell me about the different needs between engineering subdisciplines (Industrial Engineering and others)?

L5: With other department?

R: Yes, different departments within the same faculty...

L5: I can't see there is no distinguished differences. I happened to be from different major than Industrial Engineering. From my background, I can say that the most needed skills are reading, grammar and vocabulary.

R: Besides reading, is there any other task needed to be done by students in English?

L5: For me, I asked the students to complete their assignment in English. For the last final test, I tried to give students one item, out of five, in English. It was actually a short one. I have managed to mark some of them, and it turns out that some of them tried to answer in English, some still in Bahasa Indonesia. They could choose to answer either in Bahasa Indonesia or in English. That was my first try.

R : You do step by step, one at a time..

L5: Yes because I think it is important, since later on when they are entering the work place, that becomes very important...especially for industrial engineering majors. If they can use English, it can be an extra point for them. Especially now is the globalization era, so English is extremely important.

R: Does the ESP in the Industrial Engineering Department also equip the students for their workplace?

L5: Not yet, the focus of the course is to train the students to read, so that they can broaden their knowledge by being able to read English journals...that's the goal, but the reality is that not all students can do that...

R: Is the instructor from the industrial engineering background?

L5: There is no English course for this term...

R : Last semester?

L5: I have no idea for last semester but before I left, yes, from Industrial Engineering background.

R: So, from one of your full-timers?

L5: No, not full–timer, we hired from outside, but s/he had an engineering background, so not from English Department.

R: Do you have any idea whether other departments also has ESP?

L5 : I think it's Electrical Engineering Department, I am not sure.

R: If the university has a policy to make the university bilingual,

L5: So some courses offered for international students?

R: Yes...

L5: And the medium of instruction is in English?

R: Yes, EMI

L5: I think it's very good since it can attract students from other country. If we're talking about the knowledge, I am confident that we are not behind other counties. But it is true that from other point such as analytical thinking, our students lack that. From the beginning we are formed to just accept what the teacher told us. The problem is that not all lecturers at Petra are ready for that. The students are not well prepared, too.

R: But I learnt that most of the lecturers graduated from the US...don't you think that they should have...

L5: Some but not all. If all of the courses would be in English then, we're not ready. Just like us, we want to try one or two courses using EMI.

R: Any requirement for that special course?

L5: The core courses for industrial engineering majors...not elective...or supporting course. The second thing is that courses with application needs to keep on growing, so it is not static but dynamic.

R: Is there any list of such courses?

L5: No it's for the year...

R: So it's listed on the university goals

L5: Yes...

R: Besides for the purpose of having exchange students, what else do you think is the goal?

L5: To motivate other students to think about their own English .. to think to start how to develop...since in the year 2003, the globalization, whether they like it or not, the world requires them to be on that stage.

R: OK. Going back to your class; since the other day I sat in on one of your classes and ...besides reading and writing is there any other English skills students need to do?

L5: You mean speaking and listening?

R: Yes...discussion in your class?

L5: For discussion, only English vocabulary is needed

R: How about searching on-line information?

L5: They did, but in other class, I asked them to do that.

R: How about the report?

L5: I asked them to find articles and to read, and then to give comments, but the comments were in L1.

R: You mean the articles must be in English?

L5: Most of them, not a must since some have Indonesian context.

R: OK, thank you very much!

APPENDIX C.6 INTERVIEW TRANSCRIPT
Lecturer 6

R: How important do you think English for information science students?

L6: I think, for now, since the textbooks being used are in English, even some are the translation version, but I do not recommend them to read the Indonesian version since there are lots of inaccurate translation in them. So, students should be able to read fast, that is the important thing. For listening, speaking, they are number two, grammar even is number three, since they have to be able to comprehend first.

R: Do you give them lots of reading assignment?

L6: Yes, because especially in my class *Information System*, students need to do pretest, they have to do the test before the lecture starts. They have to read the textbook for that.

R: How about the handout that you prepare?

L6: The handout is in Bahasa Indonesia, but for some terminology that cannot be translated, will remain in English.

R: How many percents does the pre-test include for the overall mark for that course?

L6: 20%. That is for the whole semester. From the beginning till the end.

R: The test is in English?

L6: Yes, the item is in English

R: So the students need to really understand the textbook.

L6: Yes.

R: How about mid-term and final exams?

L6: Bahasa Indonesia, but except for final, it's mixed. But answers can be in Bahasa Indonesia.

R: Is there any complaint from the students about the pre-test? The textbooks are too difficult?

L6: No.

R: Are you saying that the students' English proficiency, especially their reading skill, is sufficient?

L6: I don't say that, since the textbook that I use for the pre-test has the translation version, and there are a quite big number of students who do not want to read the English version and choose the translation version instead.

R: The test is in English? Is it OK for them to use Bahasa Indonesia?

L6: The pretest is multiple choice. Though they do not understand but if they happen to choose the right answer then...But there are so many questions given...so it is valid enough.

R: Besides reading, what else do students need to be skillful at?

L6: What are the choices?

R: Speaking, listening, writing?

L6: Not really needed.

R: Since the test is in multiple choice.

L6: They don't really need to write.

R: Besides reading textbooks, what else do the students really need to read?

L6: Journals probably...but it is more difficult than reading textbooks.

R: Do you give them any journal reading assignment?

L6: No, usually it is specific for references in final project, for research.

R: About the English course, does the department require the students to take the course from DFC or does the Information Science Department have its own English course?

L6: For now, we ask DFC to handle the course, it is due to technical problems, our department is not ready. Even the department needs a specific English course but we are not ready to administer by ourselves.

R: You mentioned earlier that " the department needs specific English..." so it is better...

L6: Students should have been prepared with ways to read textbooks quickly.

R: Besides speed reading, other skills are not yet needed.

L6: Yes, not yet, except later when the bilingual campus program is implemented, some courses are bilingual. But we do it step by step. One or two courses first.

R: If the university really implements this program, from the information science, which courses do you think will be suitable for the tryout?

L6: Not yet for now, it will be investigated later, it depends on which lecturers are ready ...things like that...so even there is a plan already but the framework is not detailed yet...which course will be in English.

R: I heard from other department, that there is sometimes a guest visiting the department, so that students and lecturers have to be ready to host them, how about in your department?

L6: We have guests from the Netherland, but those hosting them are the administrators, like myself and the secretary, that's all.

R: Students...

L6 No

R: How about in the laboratory, students are not prepared to host the guests?

L6: For the case of visiting the lab, until now, the guests are only those from Indonesia...not foreigners.

R: So speaking is not needed.

L6: Not for now...

R: What has the department done to prepare themselves for the bilingual campus?

L6: No preparation for now since the focus is not yet that way...since this department has not completed the full circle yet...

R: Information Science is still a new department.

L6: Yes, we are going on to the fourth year...when we complete our first circle, we will think about our further step.

R: Thank you very much.

APPENDIX C.7 INTERVIEW TRANSCRIPT
Lecturer 7

R: Do you think English is important for their current engineering studies?

L7: If we see the engineering textbook (materials) that they are using right now, whether we like it or not, English is important since most of them are in English.

R: Besides reading the textbooks?

L7: Since their studies cannot be separated from textbooks, so English is important for understanding them.

R: How about other skills?

L7: Writing is important, speaking is also important. For listening, if they need to go to the audiovisual section at the library, and would like to listen to some listening materials for engineering (seminar, so on) then it is important.

R: You mean finding information necessary for their studies?

L7: Yes, if they search information from the internet, then reading is important.

L7: Writing is the least important since they do not always need to write papers/ report in English.

L7 referred to the question from the questionnaire, giving examples of the students' most common errors.

M: In the present material, there is a part called "*About Myself*" and they are asked to write something about themselves. They can write well, they can express the idea well, but only the grammar which is poor.

R: So, basically no problem with their writing skill?

L7: Since they understand the topic, which is about themselves, they can write well. The problem is only on grammar.

R: What do you think if the topic is changed into engineering topics, have you ever assigned any to the students?

L7: Never, since there is no such topic in the book and I only give them based on what is stated in the book.

R: So, so far, when you were teaching engineering students several years later, you always taught the students as what is written in the book.

L7: Yes. In the past, when the focus of the material was still specific to the students' majors (ESP), there was no writing exercise, only reading comprehension. So, in the most recent book, writing practice is provided, I tried to ask them to write something. At the first chapter, there was a part when they had to write something about themselves. And I remember once I asked them to find resources about *Martin Luther King Jr.* when we were discussing about important figures in politics. I asked them to find the resources and they were trying to find them in the library. And then they could write about those famous people very well.

R: So you taught engineering students at that time?

L7: Yes.

L7: Engineering textbooks being used are in English, and we want them to really be proficient in English, all of the textbooks must be in English, but I think the problem is in vocabulary. And how about the lecturers? Are they prepared / ready to teach in English?

R: So you think that if textbooks being used are in English, so the medium of instruction should be in English, too.

L7: Yes.

R: Why do you think so?

L7: Because it can support to each other. For example civil engineering, they are talking about "foundation". As far as I know the lecturer must prepare handouts for the lecture, but now the question is, are they able to do that in English? For instance they collect teaching materials and ask someone else to write in English for them, and then they give lecture in Bahasa Indonesia, so what are the handouts for ? The students would automatically take notes in Bahasa Indonesia. If they use English textbooks/handouts, they have to explain them in English, so that it can support to each other, and then students would automatically take English notes.

R: What happen right now is the textbook is in English, lecture is in Bahasa Indonesia, and students ' notes are in Bahasa Indonesia/English.

L7: Yes, except during their final year, students need to find information in English for their project.

R: Final project is in Bahasa Indonesia

L7: The resources are in English.

R: Do you think that the materials for English course should be related to the students ' engineering studies?

R: How about the reality right now, is the English course materials relevant with those taught in the engineering lectures?

R: So you think that it is better to go back to the previous materials used in the past which was more specific to the student's major (*Reading English for...*)?

L7: Actually there was a more specific one in the past,... it was called *English for Civil Engineering...*

R: So it was more specific.

L7: Yes,

R: Did you use that book?

L7: I did. For electrical engineering majors, it was English for Electrical Engineering.

R: Maybe because there is no communication between engineering lecturers and those from other departments?

R: And it helped students a lot, even if the definition is in English.

L7: Yes, and in case they found some new vocabulary in the definition, they could easily find it in the dictionary.

R: Did you give additional materials to the students?

L7: No, since there was not enough time. Even not enough time to discuss every reading in the book.

R: Any other problem besides the time?

L7: Mostly would be the time problem. If I gave additional materials to them I would not be able to use the book.

About students' common mistakes...

R: Since you expect them to answer the questions using their own words.

L7: Yes. Quoting is ok for me but they have to be to the point, so it should not include the unnecessary part. If they include the unnecessary part, it means that they still do not understand what the text is about.

R: And actually do the students do that ?

L7: Yes, mostly will quote, some of them do like the example I gave earlier. There were five questions and they divided the reading, which was quite long, into five parts, and then they gave the first part as the answer for question one, the second part for question number two and so on, so the whole passage was used as the answer.

R: How did you figure that out? During the group work or when you were giving marks?

L7: On the test, it happens a lot. My conclusion is that they never read the text. They directly read the questions, and the find the answers from the text, so without reading the text. When I gave the homework to do, they did not divide the text like that, since I had already discussed the reading in class. So they understood the main idea of the reading, so they could come up with a better answer. But during the test, it was found out that they did not read the text.

R: Thank you!

APPENDIX C.8 INTERVIEW TRANSCRIPT
Lecturer 8

R: So you want your students to retell what they have read?

L8: Yes, so I have the picture of whether they understand what they read. If I explained the main points and asked them to listen to me, some listened and some did not. Some thought that the reading was easy, why did the teacher bother to explain. They could read by themselves. And they started to talk among themselves.

R: Does that what happen so far?

L8: I never did that anymore...That is the system that I apply now since the class is big, and the reading is quite long. It is troublesome to explain this long passage, it will take 20 minutes. If there is a new text I will ask the students to read at home first, so that they will have a picture of what kind of reading that is going to be about. When we meet in class the following week, I ask them to work in-groups. Supposed there were 50 people, I will divide them into 10 or 6 groups, smaller groups, and I give each group a turn. For example group 1 is responsible for paragraph 1 and group 2 for paragraph 2 and so on. And when they read the paragraphs, I listen to them and give them feedback, especially if there is important point that they do not mention. That is the way. But many did not seem to care.

R: Did not care in the sense that...

L8: They were talking with others and did not listen when their friend had the turn to present in front of the class.

R: You walked around to observe them while they were working?

L8: And I could see that not everybody in the group was working. If I asked them to summarize certain paragraphs, there were only one or two students were writing and discussing, the rest were busy talking about other things...So I am confused what I should do with the class. Until now I have made the group smaller, sometimes for one unit of passage I made it smaller into 3 people. If there were three people, whether they liked it or not they had to work. It is not like some work and some not... so they had to help each other.

R: How could you make sure that everybody really contributed something in the group work?

L8: From what they have read...?

R: I learnt that the focus of the course is reading right?

L8: Yes, the focus is on reading...

R: But from what I saw in the book, the material, there are other foci, like writing, speaking...

L8: The speaking part is actually on this...*(opening the material..)*.. "Discussion" part...,

R: "Let's Talk About It"...

L8: Yes, "Let's Talk About It"...
But now the problem is, since the class was big, if I conducted this method, the discussion, the one that got the turn was only one or two groups, since it was impossible for them to make/ prepare /engage in a discussion only in 10 minutes...

R: What were they discussing for example...

L8: ...One short paragraph was sometimes supplemented by some discussion questions. So there are different materials/topics for discussion for every chapter...so it depends on what the reading passage is about...and the discussion here is about pollution...(pointing at one chapter from the book). Factory pollution here is the topic and then the students will discuss this.

R: So students need to do role-plays...

L8: Yes, there are role-plays, and there are the characters...so the ones who are going to be involved in the discussion. But here, the thing is that the book gives each character his/her own part, not to debate (with one another). So it's not like one as a president of a company and the other is as the editor of a newspaper and then they debated. It was not like that...each character has his/her own part, each has his/her own ideas, opinion, solutions... that's it.

R: The idea is from the students themselves?

L8: So, you'll be the editor, what's your opinion, you'll be someone else and what's your opinion... That's it so they don't need to be engaged in a discussion. If they are really engaged in a real discussion, the time is not enough since I can only gave one or two groups to debate.

R: You said earlier that you did not participate in developing the materials. You accept and you teach.

L8: Yes, I receive, I prepare and then I teach.

R: So far, did you follow the materials?

L8: Yes, I followed the book. Sometimes I gave supplementary outside this book.

R: The reason?

L8: Most supplementary would be in the form of vocabulary practice.

R: What's the reason?

L8: So that they students would not feel bored. Since for this book, for those who borrowed, the exercises/answers were already provided. They did not work by themselves, they thought the answers were provided. If I asked them to do the exercise in class (write on the blackboard) they just copied the answers. So the supplementary could be in the form of reading comprehension exercise, so that the students did not need to do the ones in the book cause the questions were from me...or it could be in the form of vocabulary...

R: Why vocabulary?

L8: Since lots students could not differentiate between noun, verb, adjectives, sometimes they could not see the difference.

R: So you think it was the most common difficulties for students?

L8: If I said verb... some did not understand. I don't know the basic knowledge (English grammar) they got from high school. They should have known...what it means by verb...the activities, nouns can be the doer or the idea ... not to mention adverbs and adjectives...

R: So, most supplementary you gave them was about this?

L8: Yes, I gave them that or can be something like opposites, synonyms. But things that I did not do now was making sentences...I never asked them to do that...

R: What do you mean?

L8: Like I gave them one verb, and asked them to make a sentence. Because if I gave them that kind of exercise, I had to include structure, I had to correct everything. The book provides language focus...

R: Did you follow chapter by chapter?

L8: If I thought that was useful I'll explain. If not, I skipped it...

R: How did you now that students copied the answers from others?

L8: I could see them...

R: Was it for reading?

L8: Yes...

R: For other parts, maybe not?

L8: They were no problems for writing, I sometimes used them, if the topic was pollution, I asked them to write a short paragraph or a story about pollution, the cause and effect.

R: So the focus was actually not only reading.

L8: Writing means corrections, we cannot return the assignments to the students quickly. So since the time is limited but there are lots of demanding works to do, ...but writing, speaking, they are still possible...only listening is not possible, how can I do listening exercise? Bring the player in class? Too noisy...and the class is so big.

R: Is it 50 students?

L8: Second semester like this ...it is only small number of students. Fifty to sixty students is the maximum. If it is first semester, there can be 70 students in one class. Seventy students and the majority are males...compared with girls, especially engineering majors...the female students in engineering department are especially from the Industrial Engineering. Two semester ago was in balance...males and females were of equal numbers. Sometimes the female students, was very few.

R: Did you teach engineering last term?

L8: Mix ...I taught industrial engineering majors during the first term. During the second term, I taught students from mix background: electrical, mechanical, industrial and from different year of study.

R: Is there any difference between those from the first and the second semester?

L8: First semester means they are new students, but for those from the second semester they were the repeaters or those who hadn't taken the course the semester before. Well, how can I say... new students are benefits for me, they are fresh graduates, so English is still fresh in their minds. You know they learn English during their high school. That's easier. But for senior students...they have been here for five years or sometimes they have finished courses and are finishing their thesis? They do not deal with English for quite a long time...they did read the English textbook or sometimes speak, but they din not need to follow any rules... they read, they understand it and that's it...they did not use English for exam...no problems for them. But in class, they have to follow the rules. Reading comprehension, answering questions for instance... whether they liked it or not they had to follow the rules. If the question is in past tense, the answer must be in past tense too, if the question is in present, the answer must be in present tense...There is no such thing, such rules... they just take what is written in the reading passage. No matter whether it parallels with the question or not they just did not know...

R: Did you ask them to use their own words or you let them copy the exact wordings?

L8: What I want is that they using their own words, they would prefer quoting from the passage. They did not care whether the tenses is relevant or not...they did not care...So, sometimes the passage used past tense, the question was in the present tense, they answered using the past tense, they just quoted. Since the focus/ emphasis was not on grammar, so whether we liked it or not we considered the answer was right, while actually it was wrong.

R: Since grammar was not the emphasis...

L8: Yes and the focus was only on comprehension. But actually if we said comprehension their answer was actually not completely right. The answer was sometimes very long, whereas actually the answer was only a bit/a part of their whole quotation. They were not sure if their answers were right, so they just put everything. I think they didn't comprehend. They still did not understand which was actually the right answer. If they put as much info as possible then they assumed it was right, because it's there...That's what I meant by there was not any relationship between the question and the answer. So for instance the question was not about "why" but about "how" the could came up with the answer "because"

R: Was it the common mistakes...

L8: I would prefer they could use their own words to express the same ideas...so I wanted them to be able to came up with something different from what was written in the passage. The same ideas but different words, some could do it but there was only a few of them. From the exercises, it was difficult to judge whether they could understand it or not since they worked in groups, sometimes, they asked friends if they didn't know the answers and if I asked them to come forward they just wrote the answer on the blackboard. I could see in the exam...

R: Did you always ask them to work in-groups in every meeting?

L8: To answer the comprehension questions, I gave them the freedom to choose whether they wanted to do it in-groups or not, then I asked some people to write the answers on the blackboard. If there was a grammatical mistake (tenses), I just reminded them, read the question, it is in the past or present tense. You should answer using this. So the goal was students can understand the reading passage, to prepare students to be able to read textbook. That's the main goal from the first place.

R: What do you think of the goal? Is it enough?

L8: I think it is necessary, but as I mentioned earlier, large classes and limited time are the main problem. The level of understanding/ students' proficiency is not the same. Take the industrial engineering students for instance, those graduated from high schools in the big cities. Their English proficiency might be better than those coming from smaller towns. Or they might be just the same, or if we take the high schools in Surabaya. Those who are from popular/ favorite schools will have better English compare with those from the average / unpopular high schools. So high school are influential.

R: So from the first place as you said earlier that the goal is to enable students to read textbook, then DFC has already come up with the idea to make the English curriculum be correspond to the teaching and learning process at the department.

L8: Yes, so, for instance, they have to know the topic sentence for one paragraph. That's important for reading textbook.

R: Do you think there are other needs besides reading?

L8: So far it 's only reading, I can see that a lecturer would ask students to read at least one English textbook to read.

R: How about writing?

L8: It depends on each department. If the students were asked to do a survey and then they had to write the report in English, then it is needed. But I'm not quite sure whether there is such kind of assignment that the students need to do.

R: And there isn't any communication with the engineering department?

L8: No. And I think it will become a burden to the lecturer to have to read the English report. Students who were proficient enough in English would face no problem in writing the report but those who are weak will have difficulties. I don't think it's right. So I know that it is my duty to introduce the students with skills to write a paragraph/ report. The simple one would be fine but I am not sure whether the students can deal with a more complex one.

R: Is the book provided with report writing skills?

L8: No. The writing exercise for every chapter was based on the reading passage, for example, Chapter One was about yourself, writing about yourself.

R: The topic is myself, whereas the goal is to better prepare the students to be successful in their engineering studies, looks like the topic is too general?

L8: That's why, I think the book is for the general purposes.

R: Which one do you think is better?

L8: It's difficult to say. I think ESP for engineering is outdated.

R: Why?

L8: For example engineering students, they need to know things other than engineering. Management majors, too. ESP for engineering means only deals with engineering. Well, it might work years ago but not nowadays, people need to know everything. If the students only deals with engineering and are not trained to read other areas then it is not good. General here means scientific, means knowledge. It can be from different areas, the focus can be engineering but I think the students need to know other things. There is going to be a little connection I guess. For example... mechanical engineering, a machine used can have an effect on something...such as pollution, and then disease, they can have a picture... a factory manufactured something and then the production is something like this for instance...so it has a broader range.

R: EAP or ...

L8: Yes

R: What do you think of a student who has the opinion that they can have general English from taking courses outside?

L8: It is important for students to learn things not specifically to the area of their studies. If We put it into percentage we can say 80 % specific and 20% general. General in the sense that it still has something to do with their subjects.

R: What do you about this book?

L8: It is for different department. For Industrial Engineering Department, students can get more engineering materials. But for this book, it does not have anything to do with engineering. Well, for example *Pollution* or *Internet*. But I think *Internet* can be categorized as general. It's only disadvantage/advantages of *Internet*. It s not suitable since DFC serves different departments, not mixed. But students from all over the departments were sitting in the same class, civil, architecture, mechanical, electrical...and they were using the same materials. They were mixed...The instructors do not need to prepare different materials for different departments...we're finding materials which could serve all of the departments, that's the goal, it was the way it used to be. It was mixed.

R: For now...

L8: For now, if you see the schedule, students from different department were sitting in different classes. Students from civil for instance sit in one class and students from arch sit in other class. There is a class where the majority of the students where from elect, or mechanical. It shows that the goals were quite different from the past.

R: But the materials stay the same... this book serves all departments?

L8: Yes. But I think this book is not suitable since different instructor handles different classes that consist of students from different departments.

R: So you think that the materials should be different, each class should use different materials, since the need of each dept is different.

L8: Exactly... Students are given materials suitable / in accordance with the major.

R: So the wish...

L8: The department has that kind of hopes. Since the dept said that my students from the first year/ first year students must join an English course. They might think that the course is still handled by the dept of general courses but the materials still had something to do / relevant with their majors. So for example those from the civil engineering dept, they would expect that students would be introduced to English relevant to civil engineering, e.g. kinds of building the technical terms, that's their expectation.

R: While the reality is that...

L8: The reality is that the materials are intended for the whole departments...

R: Supplementary

L8: It depends on each lecturer, whether s/he wanted to give the class supplementary or not. If possible supplementary must be relevant with these students' major, must be major specific. For instance, architecture, in this book, there is only one chapter related with architecture, it was about a library in England or something... *"Where The Books Are"*. That's it for architecture...That's what I have in mind concerning the grouping system that the DFC has right now. Maybe each department hopes that with the groupings, students would be given more exposure to materials specific to their majors. If the students are mixed, and no groupings, departments cannot say they want the students to be introduced with some major specific materials. Since economics students cannot be introduced to materials used by civil engineering students and on the other way around, it is possible for civil engineering students to be given materials from the economics department. Civil engineering students need to know management. Economics students do not need to know civil engineering materials, building are not their business. Civil engineering sometimes needs to learn management. If now, there is groupings within the 2 engineering faculties/ whole engineering departments, then maybe the departments have wishes that the students would have more trainings/practices, inputs relevant with their majors.

R: As you said there is no communication between the DFC and the engineering departments.

L8: I am also not quite sure whether the (engineering) expect students to have more practice on general English or English specific to their majors.

R: How about goals from DFC? Is it to enable students to read textbooks?

L8: Yes, from the materials being used, it is to enable the students to read.

R: Does it help students to better be prepared for their future career? So that it's not only relevant for their studies but also for their jobs?

L8: I don't think it is helpful for their future career...

R: I remember when I sat in on your class, you were talking about how to write an effective application letter to the students?

L8: Yes, and that's all. So it's only for communication used in applying for a job, nothing else.

R: What do you think, is it necessary to incorporate practices that can support students for their future careers in the materials?

L8: Yes, I think so, for practical purposes.

R: So, you're suggesting a kind of English syllabus which is a combination of general English and English for (engineering) purposes?

R: What is the strength of this book?

L8: Students will be able to learn things other then their disciplines/ study program. There is a great range of varieties of topics in the book.

R: How about the activities?

L8: The activities are great, it is going to be very good if it's used in small classes, but since our class is so big, that's the problem The problem is that there are just too many students. For example when I gave them writing assignments, one group consists of 10 students.

R: Did you ask students to write in-groups?

L8: Yes, I asked them to work in-groups, if not then I have 70 students for one class and I happened to handles 3 classes and it means that I have to read almost 200 papers. It can cause me a headache. It is impossible to just ask them to write and then I do nothing about it, I think it's not right. I have to ask them to work in-groups, but the problem is that I cannot guarantee that all of them work. I could do something like when it's time for them to submit the work, then each person is asked what is his/her contribution to the writing process, it might be possible but then again, considering the time, it's difficult to do it. Let's say we have 70 students, and every groups consists of 10 students, it means we have 7 groups. If I call one group by one group to share / present to the class what they have written, I group will take more or less 10 minutes, 7 groups means 70 minutes, that' it. One meeting will only be for this session. The same thing with discussion, it is impossible to do a five-minute discussion. If they have to debate for instance, expressing their ideas, or taking stands and then other argues or support that opinion, they will need more or less 10 minutes to do it. That example is for 7 groups but if I make it smaller, to become 10 or 12 groups, there will be no enough time, so at DFC the problem is the number of students. It is impossible to make smaller classes. Like for this semester, I teach 3 classes of industrial engineering students, I can imagine one class consists of 70 people.

R: How long have you been teaching engineering courses? Have you been teaching engineering courses for all your life here?

L8: I have been teaching engineering from the beginning. I once taught students from the Faculty of Economics but not for a long time.

R: Is there any significant difference between economics students and engineering students?

L8: Engineering students are more...what is it...their ways of thinking are more rational.

R: You can see it from ...

L8: From the result of their work. With the same materials, with the same level of vocabulary, for economics students they have readings materials relevant with their studies and for engineering students. Let's say civil engineering, they had reading passage about civil engineering, then, from they ways they answered the exam questions, I could see that civil engineering students gave more rational answers compared with that of the economics students.

Economics students sometimes did not seem to think critically to find the right answer they just copy what is written there in the passage into their answer sheet. Civil engineering students would not do it.

R: Yes...

L8: Well, for this sentences, I need to get rid of some parts ... maybe not for all of the students but in general, civil engineering students are more rational.

R: You mentioned civil engineering, so within the Faculty of Engineering itself, did you find any differences, I mean, between civil, architecture, mechanical...

L8: Yes, civil, architecture, electrical, mechanical, at that time there were only civil, architecture, electrical, machine, now there more departments, right.

R: yes, plus information science...

L8: yes, Information Science, the ones that I handled were civil, arch, electrical, mechanical. I was teaching the four of them even before the DMU existed. I taught each of them. And the worst was those from the mechanical engineering.

R: They were weak in what sense?

L8: Weak in every aspect. The class was so big, the majority of students, not majority but all of the students were boys...no girls at all and their attitudes were.... unbelievable... they was the worst from the four... for architecture...they were quiet, but passive...For civil and electrical, they were active, asking questions or giving comments...For mechanical...I remember at that time the class was so big and those who were interested in the materials were only ...about 25%. I could see it from the results of their exams, for civil and electrical, they were very good, but for mechanical....well ...

R: Did you know why?

L8: Ehm... at that time, most electrical students were from STM *(School of Vocational Studies in Engineering)*... when the Electrical Engineering Department was first opened, many of the students were from STM. The English course materials for the STM students and those for high school students are different. STM put more emphasis on practice / application than theories. On the other way around high school curriculum put more emphasis on theories, so the amount of hours given for English course for high school student were more compared with those for STM students. But maybe there has been different improvement from time to time .. now it seems like, you know when compared with others they're not too...you know... but they were getting better compared with before...in the past.

R: Thank you

APPENDIX C.9 INTERVIEW TRANSCRIPT
Lecturer 9

R: So now you are not teaching at the Department of Foundation Courses, but only serving as the coordinator.

L9: Right

R: But you had any experience in teaching the non-English majors?

L9: Right, in 1985-1986, I taught civil engineering and architecture students.

R: I heard that the English course taught in the past is different from those taught recently...it used to be quite specific and handled by each department.

L9: Well, not being handled by each department, still the DFC administered the course but the materials were based on different department. So for civil engineering majors, the materials given is about for instance how to build highways...the pebble, gravel...how much is it.. the medium..etc... whereas for architecture, we taught how to draw or to build bridges...

R: Do you know why it becomes so general?

L9: After a change of the rector, there was the question whether the Department of Foundation Courses should handle courses that are specific for each department. So,... different course for different department. If the DFC handled a course, so all departments should be able to take the course. So the curriculum was changed, and we taught reading to the students, the reading techniques, so finally the course could be given for all departments except English department majors and tourism department majors. Not only engineering students but also economic majors could also take the course. So only reading was given...English reading skill...

R: Which one do you think is more needed by the students, General English or ESP like the one offered in the past?

L9: After a research was done, no before that... English course was a compulsory, two credit hours. The reality was that there were 4 hours meeting. 2 hours with the instructors and 2 hours were considered to be tutorials. This was not good for the lecturers since they were paid as the assistance, not as the lecturer. That was why it was changed into 2 hours meeting. But within this 2 hours we felt we could not give as much as possible to the students. The head of the department gave additional courses to be taken by the students from that department. Since there were only 16 credit hours from the DFC to be taken by the students, it was not enough if English was considered to be the required course, that was why it became the elective course, so students had the freedom to choose English or other courses. The required courses were the State Ideology, Civics, Foundations of Natural Science and Foundations of Social Science. The others were electives since there were additional courses like "Christian Leadership" so it became electives. So there were departments which chose English as the required course, like the Architecture Department, and others were not, they offered English to their own department, the students did not choose English from the DFC. That was the story why English was first as the required course and now became the elective course. And now about the materials, from specific to general...So, we did a research, and there was a demand to prepare for globalization, bilingual campus and so on, so we thought what is needed by students in terms of English.

R: You mean the 98 NA?

L9: Yes, but we didn't interview the students, we interviewed the engineering departments and the prospective employers. From the research it was found that students were expected to be able to communicate in English. University graduate was supposed to able to speak good English and write a report in English. So we decided to change the materials, not only reading to prepare students to read English textbooks, but now we give the students a more general reading, and give more integrated skill exercises, speaking, writing, reading. Two credit hours every semester will not be enough. That is why some departments give their own additional English course for the students, like the industrial engineering for instance.

R: That is until now?

L9: Yes, like next semester, the industrial engineering department has English for engineering course which is required for the industrial engineering students. So for courses offered by the DFC, the students are free to choose whether they want to choose English, or other courses.

R: But I heard that English course from the DMU is one of the required courses that needed to be taken by the first year students.

L9: Not all of the students... some department would require the students to take those courses, but some do not.

R: So, it is up to the department then.

L9: Yes, it is up to the department, some offer the course as the required course for the first semester, but some for the second semester. Because if all require student to take English during the first semester, then there are going to be so many classes, and there will be none during the second semester. It's going to be a problem for the instructors. So not enough instructors for the first semester and no work for them during the second semester *(all instructors are part-timers)*. ....

R: So, in general, the materials being used is based on the needs analysis done in 1998?

L9: yes, and for the students, they demand the students to really know how to write resume,...

R: How about the needs of the students...

L9: It is expected that students have already been taught reading skills, for instance how to find main ideas...there are also some grammar exercises, even, the amount is not too great. Since this is integrated, so there are many...and the time is only 2 hours...100 minutes... it is not enough. But the ways to find out main ideas have been introduced, etc. So it is expected that they can read English textbooks. Honestly speaking, the level of difficulties for the readings in that book is quite high. So, if students are able to read those, it means that they are able to read the textbooks. The problem is that students graduated from high schools outside Java Island or outside Surabaya, have a lower English proficiency. They need extra training / exercises to improve their English, and I think they can attend the Language Education Program here at PCU. So we do not want to decline the level of difficulties since we expect them to really be able to understand the textbooks. But our goal is actually different from those stated in the past, in which students are expected to be able to read English textbooks. Not only that, we also expect them as university graduates, to be able to communicate in English, to speak in English, to write reports in English, to express their opinions in English, to listen people talking in English...etc.

R: But, do you think that students tend to need academic English or general English which enable students to communicate with other people in English.

L9: That is actually the result of the research done in the past, that is what the society demand, I don't know...probably there will be some improvement later, so there will be more demands for students to be able to write reports or things like that. Probably we need another research to investigate the situation. The content of the book is actually more to General English, so it is for all non-English majors at the university. But for architecture majors, we have a reading about library, and a more general topic is about ourselves, how to describe themselves to others, and also there is a part about writing a resume... so it is general and not specific.

R: So in other words, from what you're saying, I can conclude that the current materials used is designed not only to assist students in the recent studies but also to prepare them in their future careers, based on 1998 NA.

L9: Right.

R: The university has a long term plan to make the campus bilingual, and maybe for the first step, some courses from the engineering department are in English. What do you think about that?

L9: I agree. It is just that are the lecturers well prepared to teach in English? Are the students ready to attend lectures, which are in English? I don't know...If the bilingual is limited for speaking... I think speaking sometimes is a matter of courage and not afraid of making mistakes. Grammar is not considered. Just as an example, when I joined a tour in South East Asia, I remember the guide's grammar is not too good, but still he can communicate in English, he can tell us about the places we visited. So, if it's what the goal, I think textbooks in English are OK, but they are given around the final year of their studies. It is not good to put it at the beginning of the semester. Then, they have to speak English on a certain day of the week or on a particular class. It is for them to practice, since I think English needs a lot of practice, and courage. Therefore, even though someone is actually capable of speaking English, s/he will not speak up if s/he does not have the courage.

R: To prepare students for the bilingual campus plan, do you think that the materials being used for the DFC English course needs to be revised, or changed or added?

L9: The responsibility I think does not lie only on the DFC's responsibilities. It would be too hard for us. Every department must contribute to carry out the plan. If the DFC is asked to help than we will think about the way how to do it. As I said earlier each department must think about it, too; whether they are ready for offering courses in English, and whether the students are also ready for that. Let me give an example from hotel management department and tourism, before the students enter the program, they should do an oral interview. So students should have certain English background.

R: So the interview result will determine whether they can enter the department or not?

L9: Yes. Their program that I knew last time was that they sent 25 students to go to Holland and some were sent to Malaysia. They should have been able to speak English. If we want to do something like that for our bilingual plan, then, every department needs to consider the English language proficiency for the entrance test to the university. We cannot accept those who are extremely poor in English. Now the education system changed in the sense that starting from primary 1, the students have already learnt English. So it expected that by the time they enter the university, they should have been able to speak English well. Then, all we need is just to give them atmosphere...speak English, please, and every announcement is in

English. Students from all departments should talk in English with the lecturers, for instance. Those can contribute to bilingual campus.

R: But the university also has English proficiency section for the entrance test? (written test).

L9: Correct, but only how many percents? And all of the lecturers are not informed about the items. If necessary, the English items should be added.

R: And maybe plus the oral test.

L9: Yes, if we want the students to be fluent in English. If we accept those who are very poor , for instance s/he gets 4 from 10 point scale, then what can we expect? They will not be able to use English inside the campus. And are the lecturers ready to speak in English with the students? For instance giving engineering lectures in English with the difficult terminology, mathematics problems and so on...in English. If it is English department then it is no problem...but how about calculation? Can they do it? If yes, then no problem. But don't put the burden on DFC alone, we will not be able to do it alone.

R: Efforts from every department is needed.

L9: Yes, we can only assist, but the needs/demands are and then we can add...we can help to add something to further modify the materials if necessary. For example adding more speaking tasks/practice or for listening...do they all need language lab? Will the lab be able to accommodate so many students? Or they can watch English movie without any provided subtitles, so they can retell. It is actually already a speaking and listening practice. Or they can be asked to analyze...So, again, if DMU takes all the responsibility, then we cannot do it. We also have limited human resources. None of the instructors have master's degree.

R: How many instructors are there?

L9: four...

R: and they have to handle a large class...

L9: Yes, that is also one of the problems. For language class, it should be smaller, like at our English Department, we have 20 students for speaking class and writing class. And for integrated like that...you know I did a meeting the other day and they also complained... they just can't do that and there is no time. Seventy people in one class is overwhelming... the instructor will complain if they have to mark 70 writing assignment every meeting. So if we really want to be billingual, it has to be from the university. And then DFC will help, as much as we can.

R: OK. Thank you very much.

APPENDIX C.10 INTERVIEW TRANSCRIPT
Lecturer 10

R: Do you think the English course can support the students' engineering studies?

L10: It can be quite related to them.

R: In what sense?

L10: For their General English knowledge, for their discipline specific, I don't think it can help much.

R: Why do you think so?

L10: It is because the materials being used is very general, and does not include their majors.

R: You did not teach engineering students last term, didn't you?

L10: No…

R: When did you teach engineering students?

L10: Three or four years ago.

R: How long did you teach engineering students?

L10: It used to be almost every semester. So, civil and architecture majors, especially architecture … I taught them every semester.

R: Do you think there is any different English needs between different engineering department? Between civil and architecture?

L10: For civil and architecture, they can use the same materials. But it does not the same case with civil and electrical.

R: Can you give me an example?

L10: For instance, for civil and architecture, the focus is on buildings, but for electrical, the focus is different.

R: You told me earlier that the English course used to be administered by each engineering department but later on it was handled again by the Department of Foundation Courses. Can you please tell me about it a little bit?

L10: I don't really remember but suddenly the English course was the same for every department. It used to be handled by DFC but …was from each (engineering) department.

R: The instructor was from the department?

L10: The department was the one who was requesting…Then there was only one English course…So departments used to request DFC about it…I don't really recall. For instance, Architecture Department was requesting DFC and then they even gave the schedule…for

instance architecture was on Wednesday and civil was on Saturday...and then the instructors were from DFC.

R: How about the materials?

L10: I don't remember... I think it was from DFC.

R: But it was different from the one being used now...

L10: Yes, for now it is more general. All Non-English Departments majors can use it. In the past, management students would not be able to join the English course held for architecture students since it was about buildings.

R: And even the materials for civil engineering students would be different from those for architecture students.

L10: Yes.

R: Which one do you think is better, which one can help more?

L10: If it's for their studies I think the one offered in the past is better.

R: Because...

L10: Since the readings were more related, for instance for electrical students, the readings were about electrical engineering, for mechanical, the readings were about mechanical engineering...so it can support their study. But for the current English course, I am not saying it is bad, but it is more general. It is important, but is general.

R: It might not be related to their engineering studies but it is important for their future jobs. What do you think it should be?

L10: It should be related. Because in the past, it was given in the first semester and I remember some students asked me why it was given only for one semester and in the first semester. Whereas actually they would need English more during their second or third year of their studies because during that semesters they were required to read more English textbooks. If it was given in the first semester, they took it as one of the school's requirement, the goal is to pass the exam. They did not really understand or know why English was needed. They thought it was better to have another English course in the later semester.

R: Some students told you about these?

L10: Yes

R: Often?

L10: Yes, it was often, because for me, in addition to teaching, I have communication with the students, so I know what the students want.

R: And the students did not hesitate to express their problems to you?

L10: Yes.

R: Did it happen in class or outside the class?

L10: In class... since I asked them to do assignment in class, and while they were doing it, they were asking...

R: Why did the class run actually? Did you always refer to the materials given, or did you feel free to use your own materials.

L10: First, I referred to the materials, since we had to finish the materials.

R: Chapter by chapter.

L10: After that, I develop it by myself.

R: What is the focus of the English course?

L10: Reading, since they are required to understand English textbooks.

R: Because in their studies they were required to read English books.

L10: Yes...

R: So it means that from the past, DMU has a goal to make the English course really helps students in their studies.

L10: Yes.

R: But I browsed through the book and I found that there was not only reading exercise, but also writing and group discussion...

L10: Yes, and I tried the writing and speaking part, but the one that was unsuccessful was speaking because the large class and the students were passive. So for speaking exercise, if the students were not active, then the class would not be lively.

R: How many students in one class?

L10: At least 50 students. Except for second semester, since it becomes an elective in the even semester, then there are around 30 students in one class. But for first semester, there are usually 50-70 students.

R: Do the activities in class always refer to the materials? So if one part of the book is about group discussion, then you ask the students to do group discussion. So, you did group discussion in every meeting?

L10: Yes.

R: Is it in English.

L10: It's mixed sometimes in English sometimes in Bahasa Indonesia.
R: So you walked around the class when the students do the discussion?

L10: Yes...

R: And they were using both Bahasa Indonesia and English?

L10: But they would mostly use Bahasa Indonesia.

R: Why would they use Bahasa Indonesia ?

L10: Because the focus is on reading comprehension, if the focus is on speaking then I am afraid the students would fail the course.

R: How about writing?

L10: I gave them writing before and they made a lot of mistakes.

R: In what area do they mostly make mistakes on?

L10: Grammar.

R: No problem with the content?

L10: No problem...

R: Is there any major difference between engineering students and other non-English majors?

L10: Engineering students would understand the lesson more quickly than those from other non-English majors. I don't know maybe the exit test influence, I don't know whether the quality is lower, or something but usually engineering students can follow the lesson faster.

R: In terms of both content and the language?

L10: Yes.

R: Is there any difference within the engineering departments?

L10: Civil and architecture are equal. The weakest ones are those from the mechanical engineering.

R: Why do you think is the case?

L10: I don't know...

R: Which one do you think is more useful for the students, general English or ESP?

L10: The success in their studies or after they graduate?

R: For their current engineering studies?

L10: If is for their current engineering studies, then I would say the ESP course is more important for them.

R: How about for their future career?

L10: General English is important. ESP is too general for their workplace.

R: And I think university should also equip the students to better prepare for their future jobs.

L10: So, I think both general English and ESP should be given to the students. If one semester is not enough then English course should be given more than one semester. General English can

be given in the first semester, and the ESP can be offered during the fifth, when students are going to do the final project.

R: And as you said earlier some students expressed their opinions that they started to realize the needs to study English during the later stage of their studies…

L10: The students might learn vocabulary starting from the beginning, but if they still do not need it then, when they need, they still cannot figure it out. And when find it in their textbooks during the second or third year, they will have forgotten about them.

R: Is there any communication between English instructors in DFC and engineering lecturers to talk about the English needs of the students?

L10: I seldom did it, if I happened to see one of them then we would talk about it but not in great details.

R: What did you talk about usually?

L10: About the vocabulary. Since my background is English, so I asked them about some engineering terms. But that was very seldom. It was just when we happened to meet and I had a problem with the vocabulary.

R: OK, thanks a lot.

APPENDIX D

APPENDIX D.1 INTERVIEW TRANSCRIPT
Student 1 & Student 2

R: Do you think English is important? Especially for your studies in civil engineering?

S1: Yes, both general and specific, but for studies, it's more engineering specific, it is used until the final year, when we are searching for information for our final project. English for engineering is important.

S2: I have the same opinion, so far we have got the general one, so I think we are just repeating what we have got from high school, so our skill is not improving, but what we need is engineering specific.

R: So engineering specific is more important since you learnt general English from high school. Is it really the same?

S2: Nearly the same

R: Examples?

S1: Grammar, reading assignment... that is all.

S2: The focus is on reading assignment and grammar. That is all the focus.

R: Is that useful for your studies in engineering?

S1: It is useful, but reading is only to give vocabulary exercise, and the vocabulary for engineering studies is different.

R: So the vocabulary in your studies in engineering department is completely different from those in the English course.

S1+2: Sometimes, the same vocabulary has different meaning,

R: What do you think is the most needed skill?

S1: I think listening and speaking, those are for the future, after we graduate, but for our studies, it is reading, for our career, it's speaking and listening,

S2: We need the vocabulary for engineering, speaking and listening is important later, for communication after we graduate,

R: Do you think that a student who is poor English still can be successful in their engineering studies?

S1: If s/he is completely poor then it is difficult, but if it but if she is a little bit fluent, then she can.

S2: Those form outside Java, the quality is different from those in Surabaya, except those who achieve high academic performance from their school, but those who do not have outstanding performance might have difficulties.

R: Because...

S2: The quality of teaching (materials being taught) is different...

R: What makes them difficult to follow the lecture at PCU?

S2: PCU is consistent with the standard of Surabaya high schools...

R: But we don't use EMI here...

S1: No, but sometimes, handouts given are in English. And for textbooks, the English version, are more complete than the translation version.

R: Are you given reading assignment (English version) by your teacher?

S1: Once, in the course MT2 *(Structural Analysis2)*

S2: But we are allowed to consult dictionary, and

S1: Asked to make summary...

R: Do all teachers give that kind of assignment?

S1: So far, only once,

R: Do you feel the need to really understand the textbook? So if you do not read the textbook, will you be able to do the exam?

S1+S2: No, does not mean that...

R: Since you follow lecture and the hand-outs which probably have some Indonesian terms ...

S1+S2:Yes...

R: Do you have any problems in understanding the textbook?

S2: We never learn from the textbook, and we read the handout.

S1: Even for the English handout, it has Bahasa Indonesia in it. We mostly read the "Indonesian version"

S2: The teacher' s book itself, in Bahasa Indonesia.

R: So, how often you read the English textbook?

S2: Rare...

R: Once in a semester?

S2: Something like that.

R: So you do not see any problems...

S2: No, so far the teacher also uses Bahasa Indonesia.

R: So Indonesian handout is very helpful. Do you know the English needs of students from other departments, besides civil engineering?

S2: The one that I know is from architecture, students need to present in English.

R: What course?

S2: Not sure, at that time, one of my friends from my boarding house was preparing, closed her book and then memorized.

R: Who is the teacher, what course, what semester, do you know?

S2: The same, second semester.

R: Do you think English course from DFC is helpful for your engineering studies?

S2: I don't think so, since it is too general.

S1: I think it is...

S2: For engineering, no...

S1: yes, it is useful for "outside",

R: In what sense?

S1: To read home pages,

S2: When we search for information on the net, since it is general...

S1: If we overseas friends, so for general purposes, it helps.

R: Which materials do you think is useful for searching for information? In what skills?

S1: Vocabulary, grammar is not too important for engineering studies,

R: What books do you use?

S1+S2: The purple book...

R: The focus for the English course is reading, but it is too general…

S2: In civil engineering, grammar is not emphasized,

R: So you're saying that there is no relevance with engineering studies, but it is useful for your future careers,

S1+S2: yes…

R: Is it enough for you to prepare yourselves for the future?

S2: It is the same as high school materials,

S1: The focus is reading and grammar, whereas we need listening and speaking for our career, since grammar is not too important, what matters is that we can communicate,

R: Any suggestions you want to make to improve the English curriculum at PCU? general or specific?

S1: General is OK, we can add that,

R: Not omitted,

S1: Yes, and I think students should be encouraged to speak more, listen more, more trainings on that, I think that's very important. So they can speak with foreigners, so far if we focus on grammar and reading only, we cannot communicate well, especially if the other party speaks very fast,

R: What is the methodology? Discussions or lecturing?

S2: Lecturing, we give answers based on the questions on the book. So the comprehension questions.

S1: Quoting…

S2: Quoting from the passage…

R: Not enough speaking practice in class,

R: Do you think that collaboration between engineering lecturers and English instructors to help you in your engineering studies important?

S2: important, but I don't know how important since in civil, we emphasized on English terminology,

S1: The same, because for us, so far we just ok, the English term is this, that is all,

R: EAP or not?

S2: They are all important,

R: why?

S2: We need to socialize, in our career, we do not only need socializing but we need to deal with and dig up, the area.

S1: We hope both of them are enhanced.

R: If PCU make a revision on the English curriculum, then what do you think is the better focus?

S2: I am not sure with the curriculum, what I know is that for the engineering studies, vocabulary is important,

R: Bilingual campus, but only for some courses?

S2: It is going to be difficult to catch, because so far, even in Bahasa Indonesia, we need to learn and ask questions…

S1: Even in Bahasa Indonesia, we already have problems in getting the main concepts and to figure out what we are supposed to do, not to mention in English, it's going to be chaotic.

S2: Our class is from those "jalur prestasi" *(special stream),* we don't know in other class.

R: Can you be more specific?

S2: We achieve high academic performance in high school.

R: Are you all sitting in one class?

S1: Students with earlier ID no, is those having best performance.

S2: It is difficult in that class, not to mention in other class.

R: Do you think adding ESP is better compared with EMI?

S1+S2: Yes…

R: So you think you are not ready?

S1+S2: No,

S2: We do not have strong background.

R: Thank you!

APPENDIX D2 INTERVIEW TRANSCRIPT
Student 3

R: Do you think English is important for your engineering studies?

S3: Important

R: Why?

S3: Many literature/references are in English, from overseas, those in Bahasa Indonesia are the translation version, so having the same content actually but different books. So, I think English is important since the translation version cannot express the meaning accurately,

R: So you prefer the English version

S3: Yes

R: Which skill is mostly needed?

S3: For reading skill, I think it's comprehension...

R: Vocabulary?

S3: From what I've read so far, the vocabulary is not too difficult, if there is one or two, I can guess the meaning from the context, so, no problem for me.

R: How about engineering terminology?

S3: So far I do not have any problems since at high school I have the more difficult one, the SAT test, I did not understand at all.

R: Where did you take that?

S3: My school, since it is oriented to students who would like to continue study abroad. So, I did TOEFL, SAT, and so on. For SAT, it was in English, the reading part was very difficult.

R: Where was your high school?

S3: Pelita Harapan

R: Do you think students having poor English background will be able to be successful in their engineering studies?

S3: Successful in what sense?

R: High GPA, good academic performance

S3: Yes, I think it is possible, they would ask their friends who have better English skills if they have problems, they just ask them the translation, or retell, so, I think it's possible, do not understand English, but they can be successful.

R: You said most of the books are in English...

S3: But there is the translation version. Even the references are in English, the lecturers use Bahasa Indonesia as the medium of instruction, and the hand-outs are in Bahasa Indonesia, mostly, so I think they can be successful.

R: So, without reading the English textbooks, but if they attend the lectures regularly,

S3: Yes, attend regularly, and then they can...

R: Did your teacher ever ask you to read the English textbooks? So for instance homework for next week, read from this page until this page?

S3: Never...

R: Based on your knowledge, is there a need for the student to read and try to understand the English textbook so that they can follow the lecture?

S3: I think it's around 10%

R: And yourself?

S3: Sometimes

R: Why? What is the reason of reading?

S3: Going back to the idea that in the textbook we can find something more than we can get from the lecture, since it's only 1and a half or 2- hour lecture, to understand better, we have to read the textbook.

R: Do you think is there any different English needs for different engineering department?

S3: Surely different, because of the terminology, for industrial it's not too much since it's a mixed science, mechanical and information science are surely different; in terms of vocabulary.

R: Do you think that the English course offered by the DMU is relevant to your engineering studies?

S3: No...

R: Why not?

S3: Since what I got from the course during the first semester,

R: Last semester?

S3: Yes, the English is too general, for me personally, I could not get anything from the course, the instructor, sometimes, extremely speaking, does not explain anything, just give you assignment, which is the same as those I got in high school.

R: What is the assignment about?

S3: Let's see, writing...in-group

R: In class?

S3: No take home, no in class assignment, writing, and then mostly we are given questions and then are asked to answer, that is all,

R: Questions like...

S3: For instance from the reading passage given, there are questions from the book, but the instructor gives additional questions and we are supposed to answer them...

R: Then what do you do in class if there is no assignment?

S3: Nothing, only checking answers, that's why I said we get nothing,

R: So in class, checking the answers from last week's assignment?

S3: Yes...

R: And then for next week, please do this page, something like that?

S3: Yes, mostly like that...

R: Is there any grammar exercise or other skills as the focus?

S3: Not reading...

R: Did the instructor explain the focus of the course at the first meeting?

S3: No. The instructor said that the English course for this year is different since last year it was different for each department like English for Engineering is different from other departments. But, for my year, the English course is going to be the same, for all departments, back to general. That is what I can recall.

R: So last year they have ESP and this year is general.

S3: Yes.

R: The skill focus?

S3: No, just English.

R: And what do you think is better? General English or English for Engineering?

S3: For terminology, I would choose ESP, but actually I never learnt English for Engineering.

R: Since you are still in the first year.

S3 Yes, and for vocabulary, ESP is more needed, it's more relevant to the lecture.

R: What do you think about the English course, do you think it's necessary to add ESP?

S3: I would say the general English course is not needed. It's useless since I know my friend whose English is not good, cannot get anything.

R: For you future?

S3: English course from DFC? I don't think so,since there is not any skill improvement by attending the course.

R: Suggestions you would like to make for the improvement of the English curriculum?

S3: The course is separated for each department, so, department specific, more reading on engineering journals, the one which is not too difficult but specific engineering, I think it is going to be useful for the students, to understand the journals, since it is for the lecture.

R: So far, is there such kind of assignment in the English course?

S3: No.

R: In the engineering course?

S3: They do not give us the name of the journals but they recommend us to find other resources, and also from the Internet, about certain topics.

R: From the Internet, for sure it's in English.

S3: Yes.

R: How about the recommended books?

S3: In English.

R: Do you think communication between the English instructor and engineering lecturer necessary?

S3: Yes, so that the English instructor can understand what terminology needed to be learnt by the students.

R: Is EAP important? Or you think that you need to study other than EAP? Communication skills with foreigners for instance?

S3: I think ESP is important for the engineering studies since it is no use to study General English at school. It's the same as we got in high school, if the students feel the needs to improve their

General English, they would join the private course outside, not in here, since outside is surely better.

R: Why?

S3: First, it's more intensive for our English course, it's only 2 hours per week. For courses outside, it can be twice or three times every week, the instructors are different. DFC might be good, but for outside the goals are different and the instructors are capable to ask the students to speak, to think more creatively in English. So I think it's different.

R: Not to mention when they are native speakers...

S3: Yes.

R: Do you take any English course now?

S3: No, I used to join LIA.

R: If the university has a plan to be bilingual, and some courses are using EMI, what do you think?

S3: Agree, maybe it's too difficult for some students, especially for those from outside Surabaya, but based on my experience in high school (using EMI).

R: Thank you!

APPENDIX D3 INTERVIEW TRANSCRIPT
Student 4 & Student 5

R: Is English important for your engineering studies?

S4+S5: yes.

R: The reason?

S4: Because of the globalization era, so English is important.

R: It might be for your future career, how about for your own studies?

S4: Important.

S5: And for the textbook, the better one is those from outside, which are in English, so we have to understand English.

R: For your engineering studies, which ones are used? The translation version or the English version? I heard there are lots of translation version.

S4: The translation version and it's the copy.

R: Photocopy and the translation.

S5: If there is the translation version, than we will choose that one, but mostly in English.

R: But you would prefer to read the translation if it is available? And in other words, if you read the original version, do you have problems?

S5: It depends on the books, since sometimes, the translation version is not accurate, and the translator is not from the engineering area.

S5: Sometimes we even got confused when we have to read the translation version.

R: Were you assigned to read the English textbooks?

S4: Once, when the lecturer gave the copy in English

R: Were you asked to read the copy?

S4: No, the lecturer explained about it in class

R: Explained in class, so in other words, even the books are in English, but if you attend lecture, then it is enough.

S4: Yes.

R: Did you have problems in understanding the textbooks?

S5: Reading is no problem for me personally, but sometimes the vocabulary is difficult.

R: So the problem is in vocabulary?

S5: Specific engineering terminology?

R: What do you think is the most needed skill?

S4: Grammar and speaking.

R: Why?

S4: Eventhough we know grammar but if we don't know how to speak then it is useless.

R: That is generally speaking, how about grammar?

S4: For grammar, we need to understand grammar for reading.

R: That is general, how about for your success in your engineering study, which skill is most important?

S5: Comprehension and summarizing

R: So reading?

S5: But if it's just reading, without understanding than it's useless.

R: Do you think a student with poor English skill can be successful in their studies?

S4: No, since I think language needs to be learnt many times, repeatedly, so it's impossible to memorize a language.

S5: If a new student has a poor English skill, s/he can do self study or ask someone to translate, later on will need to read English textbook to do the assignment, so it can develop his/her English...

R: So it's possible to be successful, are there many assignments requiring you to search info in English?

S5: In my department, usually textbooks, being asked to read, or we try to find it out by ourselves, I think the one in English is better.

R: Are you often being assigned to read English textbooks?

S4: For information science, never, industrial maybe often.

S5: Architecture.

R: Does different department have different English needs?

S4: I think it's the same, only the terminology is different, but generally it is the same.

R: Ok, now about the English course at DFC, what is the focus, actually?

S5: I haven't taken any DFC English course.

S4: Reading...not really.... not speaking, ..not quite active, maybe grammar...but it is a repetition...

R: So the materials are the same as those in high school? And not reading?

S4: Yes, there is always reading in every meeting.

R: How about listening?

S4: Seldom.

R: So reading and grammar, and do you think it can be useful for your engineering studies?

S4: Not really...

R: Why?

S4: But I think it depends on each individual, if s/he wants to study, then it is useful.

R: You mean those who are determined to learn English will actively learn English from outside?

S4: Yes.

R: The English course from DFC is general, and there is also ESP, If you are to choose, which one do you prefer? The one which can be useful for your engineering studies?

S5: ESP, since we learn general English from high school, if we understand those we had in high school. Then, for the rest, we can improve our English by self-study, joining private tuition for instance.

R: For helping you in your engineering study, ok, if you are to ask suggestions how to improve the present English syllabus, what else would you suggest besides ESP?

S5: Native instructors

R: Why?

S5: Because good English grades from school sometimes do not guarantee us to be able to communicate /speak in English fluently, the pronunciation is not accurate, for instance...and listening skill...

R: Yusuf?

S4: I think our listening skill needs to be improved, I have an example from my cousin who went to Australia. At first, he wasn't well prepared, so, when he attended the class, he had difficulties. Whereas in school here, he always got 9 on 10 point scale.

R: So high school grade is 9

S4: Yes, also TOEFL score, but he still had to improve his English there…

R: When did he go there? What semester?

S4: After high school, the first two weeks there, he had to audio-record the lecture…

R: Do you prefer EAP or more General English?

S5: EAP

R: Why?

S5: Since it is more needed, General English is needed after we graduate in our future job…In our future job, we might need to communicate with native speakers…

R: That is for the workplace, but for your present study if PCU has a plan to offer a new English course/ additional English course, so you would prefer an EAP/ESP course rather than a General English course, the reason is that you have learnt it in high school?

S5: For General English, we can learn from many private course outside…

S4: It is easy to learn.

R: If several courses at PCU will use EMI, then what do you think?

S4: I agree, but the level must be adjusted.

R: Can you be more specific?

S4: The English proficiency

R: Of who?

S4: Students…

S5: And supported by the ESP

S4: If the level is to low, then it's impossible…

R: So you suggest pre-test? Which determines whether or not students can join the course?

S5: It can cause trouble then…

R: So, what do you think?

S5: The test is to see the students' English level, if not, then some might have poor performance just because their English is poor.

R: That's why you suggest a test to measure their English level before they can join the course?

S5: No, not only those who can pass the English test, everybody can attend the EMI course, only the lecture must be adjusted.

R: So maybe bilingual?

S5: Maybe English and the Indonesian version.

S4: Those who did poor in the test must join a remedial course.

R: Thank you!

APPENDIX E

APPENDIX E.1 Classroom Observation Notes 1

Course:	Mathematics IV
Lecturer:	Gan Shu San
Department:	Mechanical Engineering
Date:	Tuesday, June 5, 2001
Time:	12-13 p.m
Room:	P304
Number of students:	17
Topic:	Vector Differentiation

- Teacher explained based on the transparency.
- Students used handouts not textbook.
- Transparency was the same as the students' handouts. Students had the copy of the transparency.
- The handouts were the summary / translation of the English textbook.
- Students did not take notes (since the transparency was the same as the handouts?)
- No group works, the method of delivery was lecturing.
- Teacher did the exercises on the blackboard while explaining to the students.
- Students gave responds.
- No English was used.
- No English terms on the handouts.
- Sometimes the lecturer referred back to the transparency.
- Some English terms used by the lecturer: *Indicial, Sigma*
- Lecturer and students were doing the items/exercises together/ trying to solve the problem together.
- Students (not all) copied the answers from the blackboard.
- Lecturer used colorful chalks to explain
- The lecturer gave the time for the students to take notes before continuing the lesson/lecture.
- The lecturer never referred to the textbook in class.
- A student interrupted, expressing his idea.
- The lecturer explained, why it was right or wrong.

APPENDIX E.2 Classroom Observation Notes 2

Course: Engineering Economics
Lecturer: Julianingsih
Dept: Industrial Engineering
Date: June 6, 2001
Time: 10.10 a.m.
Topic: Depreciation

- Collecting homework.
- Terms used: "depreciation", then, providing the Indonesian translation
- Reviewing.
- The lecturer used the transparency / handouts which were in Indonesian and English.
- Explanation was in Bahasa Indonesia.
- The students' handouts were the same as the transparency.
- How about textbook used? Students have the copy of the teacher's transparency.
- The lecturer often gave the translation as soon as she mentioned the English technical terms, for example: "*useful life*" ; "*annual cost*".
- Discussing homework.
- Teacher read items in English.
- Homework/assignment was in English.
- During the conversation with the researcher, the lecturer said that at first, the assignment was in Bahasa Indonesia, but later on she wanted the students to get used to those written in English.
- The lecturer asked whether the students really understood the items.
- The lecturer asked whether anybody wanted to try to do the homework on the blackboard.
- The terms used: maintenance cost, investment cost , total invent cost, annual investment cost.
- The lecturer and students were doing the exercise together.
- The lecturer elicited answers from the students
- The lecturer pointed out at one person to answer
- The students got confused, the lecturer explained by using Bahasa Indonesia (less English terms)
- Other terms used: defender, challenger, asset
- The lecturer was approaching the students : students asked the lecturer in person
- Then the lecturer discussed the answers to the particular person' problems together with the rest of the class.

- The teacher asked the Li version of "straight line".
- The lecturer asked the students to do the exercise.
- She waited until she finished doing the exercise.
- When asking, students also use the English term.
- Other terms used: "book value before depreciation", "schedule", "remaining useful life", "DDB (double declining balance)"

APPENDIX E.3 Classroom Observation Notes 3

Course:	Electric Current Machines
Lecturer:	Stephanus
Department:	Electrical
Room:	P305
Time:	15-17 p.m

- The lecturer discussed the assignment/test in class.
- All in Bahasa Indonesia.
- No OHP was used.
- The lecturer was solving the problem in front of the class/ on the blackboard.
- No elicitation from the students.
- The lecturer was trying to find the answers by himself.
- The lecturer showed the transparency (in Bahasa Indonesia) Some technical terms were in English e.g. "voltage regulator"; "high voltage"; "open circuit"; "no load".
- Non-technical English vocabulary was used: "***Step*** apa yang harus saudara lakukan?"
- The L then discussed a new topic for that day.
- The L wrote on the blackboard while explaining to the students , no transparency was used.
- Students took notes.
- The L explained what they were going to do next.

APPENDIX F Sample Course Syllabus

No.	Tanggal	Materi	Soal dan Tugas
1.	22-02-2001	Pendahuluan: materi kuliah, buku referensi, persentase nilai, bahan kuliah periode UTS	
2.	01-03-2001	Elemen Penyimpan Energi L, C. Gejala Peralihan, response rangkaian pada $t=0^-$, $t=0^+$ dan $t=\infty$	
3.	08-03-2001	Latihan gejala peralihan	Gejala peralihan no: 2,1,3. Tugas I : Johnson 7.14
4.	15-03-2001	Gejala Peralihan	Tugas II: Johnson 7.13, 7.15, 7.32
5.	22-03-2001	OFF → Wisuda sarjana UKP	
6.	29-03-2001	Persamaan Differential orde 1	PD1: 1,4,5,6 Tugas III: PD1 7,8, test 1
7.	05-04-2001	Persamaan Differential orde 2 (natural response)	PD2: 1, 13, test 2
8.	12-04-2001	Persamaan Differential orde 2 (natural and force response)	PD2: 2, 3, 4 Tugas IV: PD2: 5, test 10
9.	19-04-2001	Persiapan UTS → Kuis kecil	GP : Johnson 190+191 PD1: test 10 PD2: test 14
10.	10-05-2001	Pembahasan UTS, bahan kuliah periode UAS	
11.	17-05-2001	Two Port Parameter, parameter y, z, h beserta rangkaian penggantinya	Two Port no.1
12.	24-05-2001	OFF → Kenaikan Tuhan Yesus	
13.	31-05-2001	Two Port Parameter	Two Port no: 2,6,7 Tugas V: two port no. 3, 11
14.	07-06-2001	Power: Instantaneous Power, Average Power	
15.	14-06-2001	Power: Effective Value, Power Factor	

APPENDIX G

APPENDIX G.1 Sample Lecture Handouts Civil Engineering

Metode Alur Gaya Dalam
(Load Path Method)

⇨ Membagi bag. struktur dalam daerah D & daerah B.

⇨ Utk. mendapatkan MPP dari struktur tsb., didefinisikan lebih dulu semua syarat batas daerah D, yaitu : geometri, pembebanan, bid. pembebanan, tumpuan dan sistem statik.

⇨ Model MPP ditentukan dgn. menggunakan Metode Alur Gaya Dalam (Load Path Method).

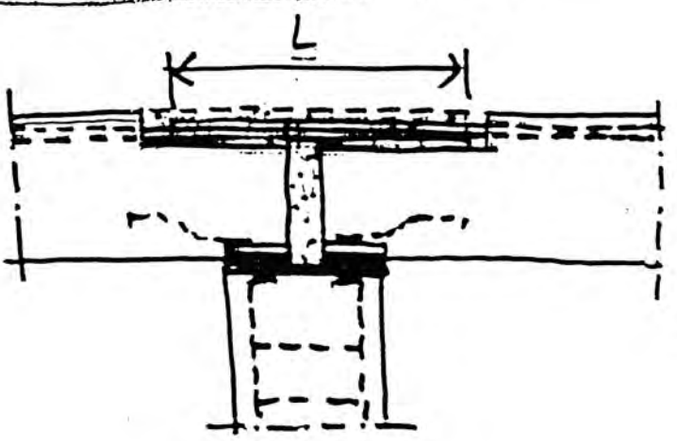
⇨ Metode Alur Gaya dpt. dikembangkan dgn. berorientasi pd. grs. trajektorie tegangan.

⇨ Bbrp. hal yg. perlu diperhatikan pd. Metode Alur Gaya :

1. Alur gaya merupakan grs. aliran (Stream line) yg. tidak saling berpotongan.
2. Alur gaya dimulai dan berakhir selalu pd. ttk. berat dari bidang pembebanan dan bidang tumpuan.
3. Alur gaya akan menempuh jalan yg. sependek mungkin.
4. Pd. lengkungan dari alur gaya akan timbul gaya deviasi C (tekan) atau T (tarik) dlm. arah tegak lurus thdp. lengkungan.

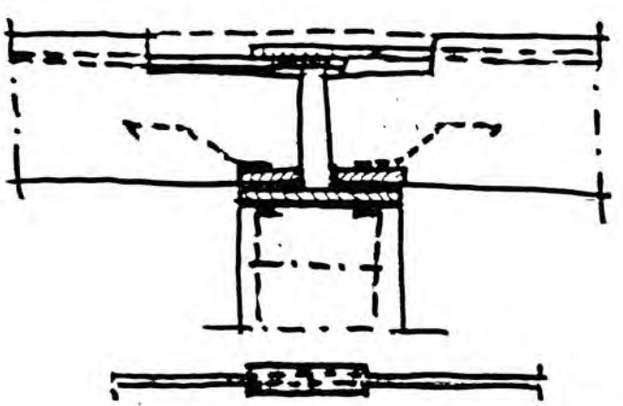
APPENDIX G.2 Sample Lecture Handout Architecture Engineering

D. SAMBUNGAN MOMEN



BESI TULANGAN
OVERLAP
TANPA LAS

L = PANJANG
OVERLAP
HRS. DIPER-
HITUNGKAN



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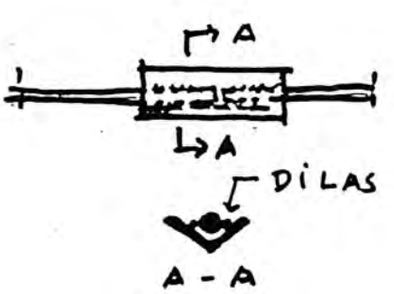
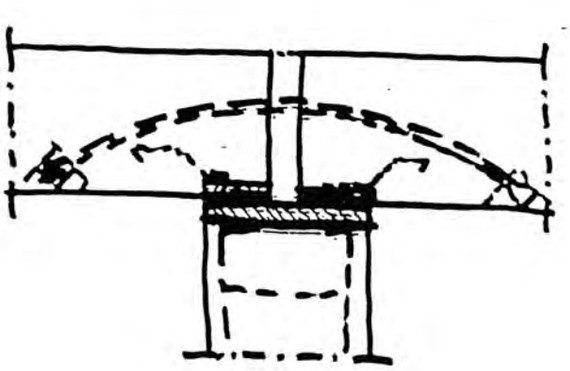
MECHANICAL
COUPLING





PRESTRESSED

APPENDIX G.3 Sample Lecture Handout Mechanical Engineering

0. KATA PENGANTAR

Teknik pembentukan merupakan bagian dari teknik produksi, yang merupakan suatu ilmu yang mempelajari cara-cara untuk merubah bahan baku menjadi suatu produk jadi.
Mengingat luasnya pengetahuan tentang proses dari teknik produksi, diadakan pembagian berdasarkan ikatan materi dari benda padat yang dibuat (menurut DIN No.8580), dan ini terdiri atas:

1. Primary Forming
2. Deforming
3. Separating
4. Joining
5. Coating
6. Changing the material properties

ad 1. Primary Forming merupakan "penciptaan" bentuk baru benda padat dari suatu cairan logam atau gas yang memiliki bentuk tidak menentu. Terjadi disini satu ikatan baru materi benda padat.

ad 2. Deforming adalah proses perubahan bentuk satu benda padat ke bentuk benda padat lainnya, tanpa adanya perubahan massa maupun komposisi materialnya yang berarti tanpa adanya perubahan dari ikatan materi benda tersebut.

ad 3. Separating adalah pemisahan atau pengurangan ikatan materi suatu benda padat dengan proses perautan.

ad 4. Joining merupakan pembuatan suatu benda padat dengan cara mempersatukan beberapa benda kerja setengah jadi, berarti terjadi penambahan ikatan materi.

ad 5. Coating adalah proses pemberian lapisan pada suatu benda seperti Galvanizing, pengecatan, pemberian lapisan plastik, yang berarti penambahan ikatan materi.

ad 6. Changing the material properties, yaitu proses perubahan sifat materi benda kerja untuk memperoleh suatu karakteristik optimum baru.

Untuk menentukan cara-cara yang akan dipilih dalam proses pembuatan sebuah benda kerja, diperlukan selain pengetahuan tentang teknik produksi, juga pengetahuan dan faktor-faktor lainnya yang me-

APPENDIX G.4 Sample Lecture Handout Electrical Engineering

* AC STEADY STATE POWER *

TIGA ISTILAH PENTING DALAM POWER:

1. **INSTANTANEOUS POWER**. (BOB + DORF)

   MANY ELECTRICAL & ELECTRONIC DEVICES HAVE MAX. INSTANTANEOUS OR "PEAK" POWER RATINGS THAT, FOR SATISFACTORY OPERATION, SHOULD NOT BE EXCEEDED.

2. **AVERAGE POWER**. (BOB + DORF)

   THE AVERAGE POWER IS EQUAL TO THE AVERAG RATE AT WHICH ENERGY IS ABSORBED OR SUPPLIED BY AN ELEMENT, AND IT IS INDEPENDEN of TIME.

3. **Effective / R.M.S VALUE** (JOHNSON)

   THE RMS VALUE of A PERIODIC CURRENT (VOLTAGE IS A CONSTANT THAT IS EQUAL TO THE DC CURRENT (VOLTAGE) THAT WOULD DELIVER THE SAME AVERAGE POWER TO A RESISTANCE R.

APPENDIX G.5 Sample Lecture Handout Industrial Engineering

SAFETY STOCK

- Kebutuhan terhadap safety stock dalam MRP sangat berkurang, yang disebabkan karena di dalam MRP waktu kebutuhan (kapan komponen dibutuhkan) beserta jumlahnya menjadi dasar utama perencanaan. Safety stock dapat digunakan dalam MRP, tetapi hanya pada level **finished product** saja. Sedangkan untuk komponen lain tidak dianjurkan.
- Sebagai ganti atau alternatif lain dari safety stock adalah **safety leadtime.** Jika pada safety stock, penambahan direncanakan untuk periode dimana tingkat inventory berada di bawah safety stock, maka pada safety lead time, penambahan dilakukan pada periode sebelum periode yang sesungguhnya.

APPENDIX G.6 Sample Lecture Handout Information Science

MULTI-SENSORY SYSTEMS

1 Introduction

- Sight is used predominantly, but also backed up in everyday life by the other senses. Since our senses cannot always be relied upon on their own (for example, our visual system is easily fooled by optical illusions), together the sense represent a much more potent force.

Information provided by senses other than visual:

- Hearing: our surroundings, movement of people around us, conversations, sudden noises, clues and cues that switch our attention. Music can bring moods, conjure up visual images, evoke whole atmospheres or scenes in the mind of the listener
- Smell: detecting fire, checking on food, etc
- Touch: tactile feedback when using tools that requires holding or moving

In multi-sensory interaction, each sense providing different information that is built up into a whole.

In mostly visual interactive computer systems the visual channel may be overloaded if too much information for the user to comprehend is presented all at once.

Utilizing the other sensory channels improve interaction by increasing bandwith of the interaction, and makes human-computer interaction more natural in use.

2 Usable Sensory Inputs

Use of channels other than visual must consider their suitability and the nature of the information those channels can convey.

3 Multi-modal and Multi-media Systems

Multi-modal systems take advantage of the multi-sensory nature of humans,utilizing more than one sense (or mode of communication) to improve the interactive nature of the system.

Multi-media system use a number of different media to communicate supplementary, additional or redundant information.

Thus multi-media systems are often multi-modal, but not always.

4 Speech in the interface

Speech is an effective an natural means of communication between humans.

4.1 Structure of speech

Phonemes : atomic elements of speech, each represents a distinct sound

Prosody : change of tone and phoneme quality.

Allophones : differences in sound caused by phonemes sound differently when preceded by different phonemes

Morphemes : the smallest unit of language that has meaning

Even being able to decompose sentences into their basic parts does not mean that we can understand them. The syntax or structure only serves as a standard base for semantic or meaning.

4.2 Speech Recognition

Problems with speech recognition system:

- Complexity of language
- Background noise, interfering with the input, masking or distorting the information
- Redundant or meaningless noises from speakers (repeating, pausing, or using 'continuation' noises to fill in gaps in usual speech).
- Variations between individuals as people

Appendix H. Background Information of Engineering Textbooks

Course Code	Year of Study	Book Code	Title	Author	Publisher	Year of Publication/ edition	Length
C3	2	B1	Structural concepts and Systems for Architecture and Engineers	Lin, T.Y.	John Willey and Sons	1981 (1st ed.)	507
C3	2	B2	Structures	Schodek, D.L.	Englewood Cliffs, N.J.: Prentice Hall	1980 (1st ed.)	557 p
C3	2	B3	High-rise Building	Schueller,W.	Malabar, Fla.: R.E. Krieger Pub. Co.	1976 (1st ed.)	274 p
C3	2	B4	The Vertical Building Structure	Schueller, W.	New York: Van Nostrand Reinhold	1990	658 p
C4	2	B5	Alternating Current Machines	Say, M.G.	Pitman Publishing	1976 (3rd ed.)	543p
C5	1	B6	Basic Electric Circuit Analysis	Johnson, D.E., Hilburn, J.L. and Johnson, J.R.	Englewood Cliffs, N.J. : Prentice Hall	1995 (5th ed)	525 p
C6	4	B7	Using Fuzzy Logic: Towards Intelligent Systems	Yan, J., Ryan, M., Power, J.	New York: Prentice Hall	1994 (1st ed.)	256 p.
C6	4	B8	Fuzzy Sets and Fuzzy Logics: Theory and Applications	Klir, G.J.	NJ: Prentice Hall	1995 (1st ed.)	574p
C7	3	B9	Principles of Energy Conversion	Culp, A.W.	Tokyo: McGraw-Hill, Inc.	1985	
C7	3	B10	Energy Conversion Systems	Sorensen, H. A.	New York: Wiley	1983	563p
C8	2	B11	Mathematical Methods in the Physical Sciences	Potter, M.C.	Englewood Cliffs, N.J.: Prentice Hall	1978 (2nd ed.)	466p
C8	2	B12	Advanced Engineering Mathematics	Kreyszig, E.	Canada: John Wiley and Sons, Inc	1983 (5th ed.)	118p

C8	2	B13	Advanced Engineering Mathematics	Wylie, C.R. and Barrett, L.C.	Singapore: McGraw-Hill Book Co.	1985 (5 th ed.)	-
C10	3	B14	Analysis and Control of Production System	Elsayed, A.E. and Boucher, T.O.	Englewood Cliffs, N.J.: Prentice Hall	1985 (2nd ed.)	450p
C11	2	B15	Principles of Engineering Economy	Grant, E.L.W., Ireson, G. and Leavenworth, R.S.	New York: Wiley	1996 (8 th ed.)	591
C11	2	B16	Engineering Economy	Thuesen, G.J. and Fabrycky, W.J.	Englewood Cliffs, N.J.: Prentice Hall	1993 (8 th.ed)	717
C12	3	B17	Human-Computer Interaction	Dix, A, Finlay, J., Abowd, G., Beale, R.	New York: Prentice Hall	1993	570 p
C13	2	B18	Computer Organization	Hamacher, V.C., Vranesic, Z.G., Zaky, S.G.	New York: McGraw-Hill	1996 (4th ed)	-
C13	2	B19	Computer Organization and Architecture	Stallings, W	NY: Macmillan Publishing Company	2000 (5th ed.)	748 p

APPENDIX I. CHAPTER INFORMATION

Book Code	Goals	Sub-headings	Key points highligted	Figures	Tables	Summary	Problems / Exercise	Solutions	Glossary	Notes at end	References	Further Reading
5	x	o	x	o	o	x	o	x	x	x	x	x
7	o	o	x	o	o	x	x	x	x	x	o	o
8	x	o	o	o	o	x	o	o	x	o	x	x
11	x	o	x	o	o	x	o	x	x	x	o	x
12	o	o	o	o	o	x	o	x	x	x	x	x
13	o	o	o	o	o	x	o	o	x	x	o	x
14	x	o	o	o	o	o	o	o	x	x	o	x
15	x	o	o	o	o	o	o	o	x	x	o	x
16	x	o	o	o	o	o	o	x	x	x		
17	x	o	o	o	o	x	o	x	x	o	x	x
18	x	o	o	o	o	o	o	x	x	x	x	o

X = information is not provided
O = information is provided